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Manual Training as Vocational Education?

AN INVESTIGATION

Wilson H. Henderson

DURING the past few years much has been said and written concerning the value of Manual Training as vocational preparation. Charges that manual training is a failure, worthless, and has contributed nothing to vocational efficiency, have been quite frequent, especially in the Eastern states.

If our definition of vocational education is confused by our conceptions of the significance of the terms "controlling purpose," "recognized vocations" and "profitable employment," no definite conclusions can be reached by inquiries of any character. The question then becomes one for academic discussions with no possible conclusions. If, on the other hand, we will consider vocational education as that education thru which *marketable skill or knowledge* is acquired, we can judge of schooling on the basis of *fact*. If skill or knowledge resulting from certain training is marketed there can be no controversy as to its marketability.

Wishing to secure certain facts concerning the value of the manual training offered in representative high schools of the Middle West, the following letter was mailed to a number of high school principals:

Considerable publicity has been given to statements made by prominent educators to the effect that Manual Training does not contribute to the vocational efficiency of high school pupils. We have a feeling that these statements are not founded upon fact, especially insofar as Manual Training in the high schools of the Middle West is concerned.

For the purpose of ascertaining the facts, we are undertaking to obtain statements from 500 boys who have pursued manual training courses in high schools and are now engaged in industrial work.

We are quite sure that you will be interested in such an investigation. In order to assist us, will you kindly send us the names and present addresses of 50 to 75 graduates of your school who are now engaged in occupations directly related to the shop work taught in your school? We wish to send each of these men a blank such as the one enclosed.

We assure you that in our report, nothing will be published which will in any way reflect upon any one school.

A stamped addressed envelope is enclosed for your reply and your co-operation will be appreciated.

A few principals disregarded the request, several replied that no records of alumni are kept, while a few replied that it is contrary to their custom to supply names and addresses of graduates. To each person listed, the following letter and questionnaire was mailed:

Dear Sir:—

Within the past few years there has been considerable discussion concerning the value of the manual training work offered in high schools. We feel that the persons most competent to give an intelligent opinion on this subject, are the men who have pursued such courses in high school and are now engaged in some line of work related to high school manual training. We are, therefore, asking 500 high school graduates to answer the questions on the enclosed blank.

We assure you that your name will not be used in connection with any report of this investigation and that you may have no hesitancy in replying fully and frankly. We want your honest opinion.

A stamped envelope is enclosed, and an early reply will be appreciated.

Information Blank.

1. Name of High School from which you graduated.....
2. Year.....
3. How many years of Manual Training did you have in high school? .....
4. How many hours a week?.....
5. Line of work in which you are now engaged.....
6. Did you serve an apprenticeship after completing school? .....
7. What other training, if any, have you had preparatory to the work in which you are now engaged?.....
8. Have you found that the manual training work (drawing or shopwork) have been of benefit to you in your work? .....
9. Much or little?.....
10. Has it directly aided you to secure more pay for your work than you would have received without the work in school?.....
11. Would you recommend that this work in the school be continued? .....
12. What changes, if any, would you recommend?.....
.....
13. Other comments .....

Signed.....

Three hundred and ninety-three replies were received from graduates of the following high schools: Rock Island, Ill.; Springfield, Ill.; Rayen High School, Youngstown, O.; Manual Training School of Washington University, St. Louis; La Salle-Peru Township High School, La Salle, Ill.; Hackley Manual Training High School, Muskegon, Mich.; Lane Technical High School, Chicago; Crane Technical High School, Chicago; East Technical High School, Cleveland, O.; Cass Technical High School, Detroit; McKinley High School, St. Louis; Des Moines High School, Des Moines, Ia.; Manual Training High School, Indianapolis, Ind.; East and West Division High Schools, Milwaukee; High School of Anderson, Ind., Minneapolis High Schools.

The replies to question number two were as follows:

Year of Graduation.

1892	1	1905	6
1894	1	1906	15
1895	1	1907	3
1896	1	1908	16
1899	1	1909	29
1900	2	1910	28
1901	3	1911	35
1902	11	1912	70
1903	10	1913	79
1904	10	1914	70

Not reporting, 1.

Average time out of school, 4.25 years.

Question number three. How many years of Manual Training did you have in high school?

1 year	6	3½ years	14
1½ years	3	4 years	254
2 years	28	4½ years	2
2½ years	3	5 years	27
3 years	56	Not reporting	1

Average length of Manual Training course.. 3.68 years.

The replies to question number four are so indefinite and vary to such an extent that it is almost impossible to summarize them. Some had as little as two class periods a week, the others varying from three to fifteen periods a week. Very few reported as high as fifteen periods.

Occupations.

In considering the replies to number five, I have grouped the occupations as follows:

Group 1, those teaching some form of Industrial Arts 27

Group 2, those attending college 68

Group 3, engaged in occupations having no apparent relation to the manual training work..... 72

Group 4, engaged in occupations having some relation to the manual training work of the high school 226

Group 1. Teaching Industrial Arts.

Question number six does not apply to this group.

Question number seven:

Attended college or normal school	22
Had practical work in commercial shop	3
Experience in U. S. Navy	1
No schooling beyond high school	1

Questions numbers eight and nine: All answered *much* or *very much* benefit.

Question number ten:

Received more pay on account of work	22
Uncertain	3
No more pay as result of work	2

Of those who answered "no," one studied manual training in high school one year, five hours a week. The other is teaching agriculture. The recommendations of this group were not considered pertinent to this investigation.

Group 2. Attending College.

Questions numbers six and seven do not apply to this group.

Questions numbers eight and nine:

Manual Training of "very much" benefit	20
Manual Training of much benefit	28
Of little benefit	8
Of no value	1
Valuable as general education	11

Question number ten:

Directly aided to receive more pay	16
Received no more pay	8

One man worked thru four years of college and is now studying medicine, earning his way as a carpenter with no other training than that received in high school. Two others are earning their way thru college by what was learned in high school manual training.

Question number eleven: All recommended the continuance of manual training.

2 recommended more lines of work.

1 recommends more mathematics.

2 recommend more time to manual training.

3 want more competent instructors.

6 recommend that student be allowed to specialize.

Group 3. Engaged in Occupations Unrelated to the Manual Training.

This group may be considered in two divisions:

(a) Clerical positions	40
(b) Others, as follows:	32
Unemployed	1
Editor	1
Attorneys	2
Druggist apprentice	1
Pharmacist	1
Physician	1
Dentists	2
Salesmen, solicitors, etc	22
Trainman	1

These persons replied to questions eight and nine as follows:

	Div. (a)	Div. (b)	Total
Of no value	9	3	12
Of very much value	4	8	12
Of much value	9	9	18
Of little value	12	9	21
Received more pay	9	8	17
Received no more pay	20	15	35

One clerk recommended that manual training be discontinued.

Recommendations:

More practical teachers	5
Specialization	7
More time	1
More science	1

Other comments: From the physician, "I consider it the most valuable course in high school."

From an attorney, "Altho my work is not related to manual training work, I believe that the training received has so broadened my knowledge and experience that I am better able to grasp the details of any technical questions involved."

Group 4. Engaged in Occupations Related to the Manual Training.

This group must be considered in two divisions:

(a) Those who have attended college	30
(b) Those who have had no schooling after high school	196

Those in division (a) are engaged in the following occupations:

Some line of engineering	11
Jeweler	1
Draftsmen	5
Manufacturing	5
Architecture and building	2
Machinery merchant	1

Agriculture	2
Machinist	1
Blast furnace work	1
Superintendent of plant	1
Question number seven:	
Served apprenticeship	6
Did not serve apprenticeship	24
Question number eight:	
Manual training work of benefit in their work.	29
Of no benefit (drawing of benefit)	1
(This man had shop work in high school 1 year 2 hours a week.)	
Saved one year in college	3
"Indispensable"	2
Question number nine:	
Of much benefit	12
"Very much benefit"	14
Of little benefit	2
Question number ten:	
Received more pay as result of Manual Training	14
Received no more pay	3
Uncertain	7
Indirectly	6
"Could not hold position without it"	1
One man recommended that the manual training work be discontinued.	
Other recommendations:	
Better teachers	3
More science	2
More English	2
More time	1
Specialization	2

The replies, comments and recommendations of this group are thought worthy of careful consideration. These men have been trained to think clearly and to discriminate carefully. They are familiar with the requirements of industry and with the problems of training for industrial occupations. The following quoted comments are indicative of their attitude toward the work.

"While in high school and college, I made several hundred dollars worth of furniture for sale and almost completely furnished the lower floor of my parental home. It has not been a factor in determining my present salary but has given me an appreciation of good furniture and of proportions that I could not have obtained in any other way." This man graduated in 1909, had two years of manual training in high school six hours a week.

"To me it is worth more than my four years Latin, three years German, two years Greek and two years French combined. It appears that the tendency in high school is to prepare all students for college entrance requirements. This is proper and greatly advantageous for the few who enter college but unfair to the great majority who have no such privilege. The average high school graduate can command very little if any, more salary than the public school graduate. If he has secured in his high school course a thoro training in shopwork, drawing, etc., he would be worth more from the beginning than the boy without the high school course."

The following is from a graduate of 1906 who is now engaged in blast furnace work. He had manual training work in high school two years, two hours a week: "I think, from my experience, that manual training or shopwork has no place in a high school for the reason that if a boy expects to go into industrial work after completing his short four years' course in high school, he has needed all that time to improve or rather develop his mind along lines of study such as English, mathematics, etc. Shopwork or manual training is a good excuse for a fellow who is a bit lazy of mind and hates to use his head. If he would go into the shops of a mill he could soon see that a week spent in one of them would net him as much if not more than a year of high school shopwork. I think mechanical drawing is a mind developer and every practical boy should know how to draw a sketch or read a blue print." Evidently two hours a week is "bad medicine."

Group 4. (b) Engaged in Related Occupations But Have Had No College Work.

The replies of those in this group are particularly pertinent to this investigation. This group has not attended college or had any other schooling beyond the high school. Those who have served no apprenticeship went into industry direct from the high school and their replies indicate whether or not the skill acquired in high school is marketable.

OCCUPATIONS REPRESENTED.		Served apprenticeship	Served no apprenticeship
Draftsmen	53	17	36
Some line of engineering	22	5	17
Metal workers, machinists, sheet metal workers, etc	18	6	12
Woodworkers, carpenters, cabinetmakers, patternmakers	26	7	19
Machine designers	5	2	3
Automobile manufacturing	8	2	6
Chaffeur	1		1
Automatic sprinklers	1		1
Farming	3		3
Factory work	6	1	5
Electrical work, telephones, etc	19	3	16
Factory and building sup'ts	7	3	4
Decorators and designers	5	2	3
Plumbers	1	1	
Architectural work	5	2	3
Railway equipment	4	1	3
Harness maker	1	1	
Paper manufacturer	1		1
Laundry work	1		1
Canning salmon in Alaska	1		1
Elevator manufacturer	1		1
Hardware business	2		2
Concrete construction	1		1
Gas distribution	1		1
Estimators	3	1	2
	196	54	142

Other training:	
Correspondence work	6
Evening school	5

A very few answered that the entire four years of apprenticeship had been required. Several answered that school time had been credited on apprenticeship.

Questions numbers eight and nine:

Of no benefit	3
"Very much"	99
Much benefit	73
Little	18
Uncertain	3

Question number ten:

More pay	150
No	29
Uncertain	2
Indirectly yes	3

Of the 29 who answered no more pay, one is a farmer. Another farmer from the same school in the same class replies very much benefit and more pay.

1 is an estimator with no other schooling, graduated in 1913.

1 is an electrician, no other schooling, no apprenticeship.

2 stationary engineers, no other schooling, no apprenticeship.

1 phone inspector, no other schooling, graduated in 1913.

1 tool inspector, no apprenticeship, no other schooling.

2 draftsmen, no apprenticeship, no other schooling.

1 an auto repair man, no apprenticeship, no other schooling.

1 is driving a delivery car, graduated in 1914.

1 is canning salmon in Alaska. Graduated in 1914.

Recommendations: All recommended that it be continued.

More mathematics	12
More trades	6
More time	14
Teachers with practical experience	6
Make work more practical	9
More English	5
Allow specialization	21
More science	7
More thoro	4
More freehand lettering	13

Comments:

"The writer is filling a position at present at $2,000 per year, which I feel is due almost entirely to the fact that my drawing instructor in school insisted on my taking a special course in mechanical drawing, seeing possibly some special ability along that line, in me. That special work enabled me directly to obtain employment with a designer before I graduated from school, serving my apprenticeship during summer months. Had it not been for the manual training I would never have entered my present vocation. The general training of mind and hand I obtained at school has enabled me to handle satisfactorily this position for the last five years, the firm having tried designers one after the other for some time, and owing to their lack of general mechanical knowledge all proving unsatisfactory."

"Re-arrangement of other subjects to more practically meet the needs of the worker."

Here is a good hint: "That teachers work in some honest-to-goodness shop during vacation."

"If I had not had the four years of High School training I doubt if I would be holding my present position. I am at present chief draftsman for the firm I am employed by. I am earning $30 a week. Have been employed by this firm three years and have been chief draftsman for one year."

Here is a supreme test of a school: "I have two little boys now and if they live and the school is still in existence I hope to send them there."

"A system whereby boys would not stop school abruptly to go to work, but rather devote part of their time to both school and work, gradually developing their positions."

"I figure that the four years of shopwork and drawing I received in school are worth more than two years of apprenticeship to me."

"I did one year of post graduate work after graduating from high school before I sought employment in July, 1914. I applied for work at various machine shops where help was wanted, but upon telling them that I was a technical school graduate and had only one year of machine shop work they told me if I had no practical experience they could not use me. Yet I know several fellows who don't know a lathe from a shaper who have been hired in these places. It seems as if these shop owners have no use for educated people."

Summary.

Fifty-five per cent of the entire group and 76 per cent of those who are in occupations related to the manual training work with no schooling beyond the high school, state that the manual training has directly aided them to secure more pay in their work. To further summarize the replies seems impossible and fruitless. The replies have not been selected; all that were received have been recorded here. That the high school principals selected the names with any degree of care seems altogether improbable. On the contrary most of them indicated that they do not keep accurate records of the progress of their graduates such as the private commercial schools and some of the newer vocational schools have.

A consideration of the replies received demonstrates that statements to the effect that manual training contributes nothing to vocational efficiency, are wholly unwarranted and without foundation. The investigation would seem to demonstrate beyond reasonable controversy that the work given in many high schools under the name "manual training" does impart marketable skill in a considerable degree. That this skill is not marketed, does not alter the facts.

The replies do not, however, indicate that all manual training does contribute to efficiency either vocational or otherwise. It is quite evident that the manual training is often poorly taught with an inadequate allowance of time by teachers with insufficient training and experience. The same might be said of every other subject in the curriculum.

The type of training which enabled three men to earn their way thru college is worthy of some careful consideration. While it is not vocational education, according to some of our legal definitions of the term, it is certainly a very near approach to the ideal training for the young man.

WAGONS AND COASTERS

Ray F. Kuns, Oyler School, Cincinnati, O.

THERE is nothing which appeals more to the boy of ten or twelve years of age than some form of coaster or wagon. By the addition of a few metal working tools to the wood-working equipment, as suggested in a former article, any of the models described herein can be readily built. All of the models shown have proven satisfactory in actual service.

The usual method of handling one of the larger models while in course of construction in the shop is as follows; however it is not followed invariably.

In the early months of the year as time and suggestions offer themselves, a model is worked out and allowed to be used around the shop. As the classes come and go the model is examined and tried by the various boys who are at all interested. About the middle of the year shares of stock similar to the one shown are offered for sale. Sometimes the sale of stock is limited to certain classes but usually it is offered in all of the classes.

ONE SHARE STOCK.

Oyler Auto-Coaster Company.

This Share of Stock will entitle Mr..... to one finished AUTO-COASTER on or before June 19, 1914, provided only that the following conditions have been faithfully met.

That he shall have paid into the common fund for the purchasing of all materials the sum of $1.00 (One Dollar).

In case the chain for the transmission is furnished by the holder the sum of $0.25 (Twenty-five Cents), will be deducted from the above price.

In case the paint is furnished by the holder, the sum of $0.10 (Ten Cents), will be deducted from the above price.

That he shall do his full and rightful share of the work necessary to the finishing of all AUTO-COASTERS being made.

OYLER SHOP, Feb. 2, 1914.

ORVILLE MEYER, Pres.
HERMAN DIERKER, Treas.

The number of shares of the stock sold determines the number of wagons to be built. In building them each boy does not build his own but as far as possible the factory idea is carried out. For instance if the wheels are being made; one boy may mark them all off, another may saw them out, another may cut the tires, another may drill the holes in the tires, another may rivet the tires together, another may fit the tires in place, another may get out the boxings and still another fasten them in the wheels. By this method boys gain the spirit of co-operation and come to realize what it means in the world's work.

What stock changes hands after the work has been started usually does so at a premium. The boys realize that their work adds value to the stock.

These wagons are not presented as perfect. Some of them, however, have passed thru their second summer, which is considered a fair record for a wagon which has to carry three or four youngsters at a time.

Coastomobile.

One of the most desirable features of this wagon is the steering device which works similar to that of the ordinary motor car.

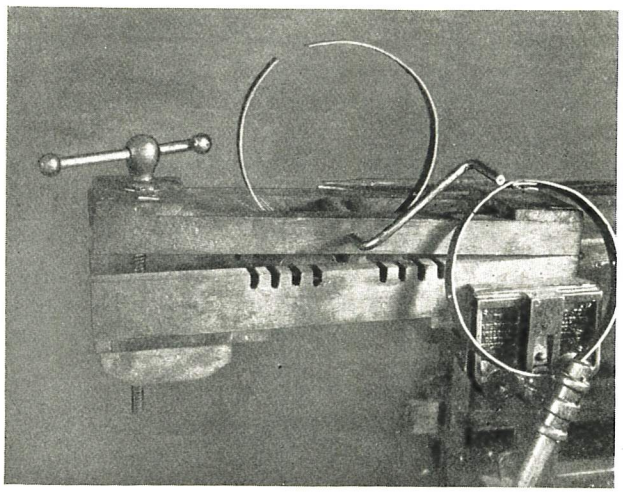
All metal parts are of soft steel which works more easily than wrought iron. Nothing over a good red heat is required in working it and much of the bending may be done while the metal is cold.

While the lathe can be used to good advantage in some of this work it is not essential to a good coastomobile.

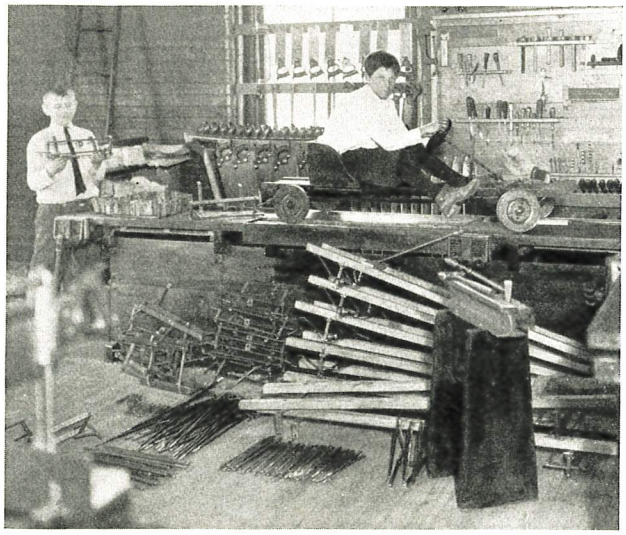
A band saw will be of material aid in working out some of the parts, especially the wheels, but even these may be worked out by hand.

A drill press may be either hand or power, but one or the other is absolutely necessary.

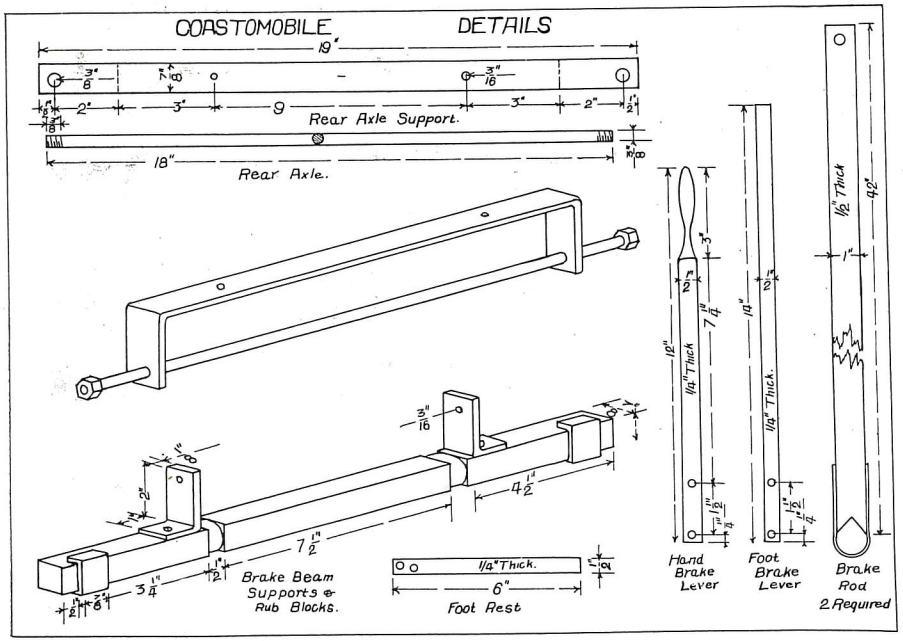
Front Axle. While the assembled axle is a little complicated the details are simple. The top bar is made heavier than the bottom bar as it carries all of the weight. The steering knuckles are the most difficult parts to get out. The pipe must be cut with the hack saw as the pipe cutter would close up the end too much. The cores are inserted with their ends touching the spindle and held with a 1/8″ rivet. After the top and bottom bars are assembled on the knuckles, holes are drilled in the outer ends of the cores and a wire passed thru them and twisted as shown. The spindle is held in position with a 1″ rivet.

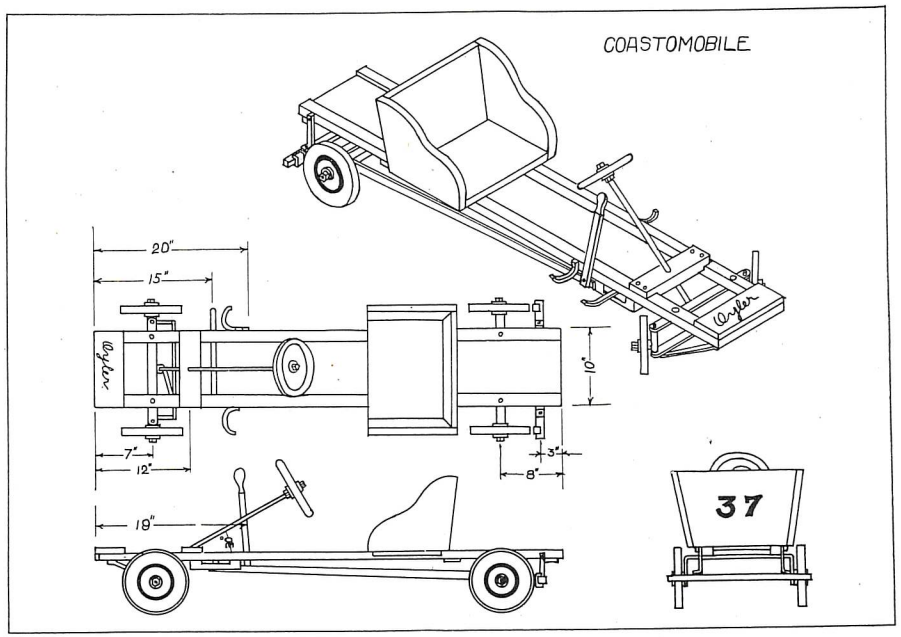


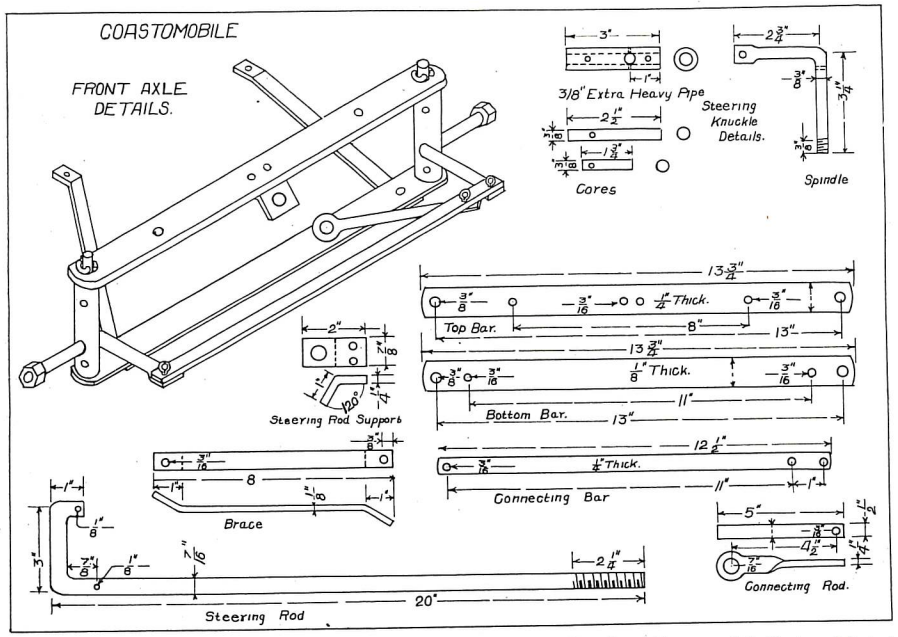
Homemade Tire Bender used in the Oyler Shop.

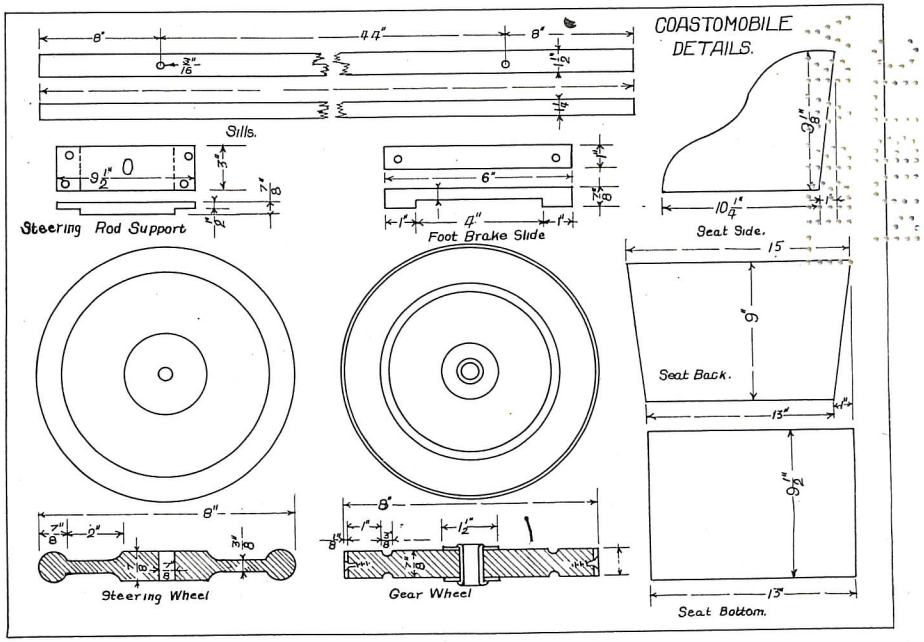


Coastomobile Parts Ready to be Assembled.









Details of Coastomobile Parts. Made in the Oyler School by the Author's Pupils.

Steering Rod. This is set at an angle of about 30° with the sills. Allowance must be made for this in working out the steering rod support and the connecting rod. The steering rod itself is quickly and neatly bent by heating to a white heat if this is possible, a red heat will do, and inserting in the ½" hole in the anvil. Hammer on the 3" section as this alone may be flattened without harm.

Cotter pins are used to hold the steering gear together.

Rear Axle. The important point in the construction of this is to have the center of the shaft just 2" below the top of the support.

Here as in the case of the front spindles one side should have right hand threads and the other left hand threads. This would obviate the danger of the nuts running off. However if all right hand threads are used and the nuts turned quite tight there will not be much trouble from this source.

Brake Lever and Brake Beam. The beam is made from a piece of oak or other hard wood. Brake shoes are made from pieces of strap iron ⅛"x⅞"x2". After bending to shape they should be placed in position on the beam and clamped tight in the vise thus forcing the ends of the shoe into the beam which is all the fastening required. The supports for the beam are made from the same weight material as the shoes.

The handle on the hand brake is forged to shape and ground or filed smooth. The foot brake has the outer end bent up to keep the operator's foot from sliding off.

Two brake rods are required. These are worked out to the size suggested and any extra length is cut off when assembling.

Foot Rests. Two of these are required. Work them to the size suggested and bend to the shape shown in the assembled view. Use a 3/16" carriage or stove bolt for fastening these on, in fact bolts should be used thruout if their cost is not prohibitive.

Steering Wheels. Use oak or any other hard wood at hand. The wheel shown in the drawing requires a lathe for getting it out, however, if no lathe is available a very satisfactory wheel may be worked out by hand. In this case the edge should be rounded with the spokeshave, a 7/16" hole bored in the center and the wheel left at that.

Gear Wheel. With a close fitting tire this makes a very solid as well as durable wheel. This is the style wheel used on all wagons built in the Oyler Shop. While it is not all that might be desired still it forms a very satisfactory wheel. As in the case of all wheels, tires must be kept tight.

First lay out the wheels with the dividers being sure to get clean cut lines. Next cut these round on the band saw cutting to the lines from the outside. If no band saw is at hand they may be worked to size with the hand tools. Next bore the holes in the centers of them. These holes are approximately 11/16" and should be a snug fit for the hub or boxing. Be very certain to get the holes true, otherwise the wheel will wabble as it turns. Boring on the lathe or drill press is the best way to do this but if they must be bored by hand the wheel should be turned ¼ of a revolution for every full turn of the bit.

Tires. These are made from ⅛"x⅞" soft or mild steel. Add ⅛" to the diameter of the wheel and multiply this by 3.1416 for the length of the tire. When one tire has been found to be the proper length all others may be cut by the same pattern.

Ordinarily welding is too hard for boys in the grades so a plate 1" long, of the same material as the tire, is set on the inside of the joint and each end of the tire fastened to it by means of a 3/16" rivet. Keep the head of the rivet on the inside of the tire and countersink the tire so that the bur may be even with the surface of the tire and not form a bump. A notch is cut in the end grain of the wheel to take this plate. After the tire has been placed on the wheel six holes are drilled and countersunk for screws to help hold the tire in position. A good method of handling the wheel and tire proposition is to cut the wheels as soon as the wagon is started and store them away to dry out thoroly. Later on when it is time to finish them fit the tires closely to them and in case they are a little loose water applied to them will quickly swell them tight. Theoretically of course the wheel should be thoroly dry and the tire heated and shrunk on. However this is not very practical in the grade shop and burns are too apt to be the result.

Tire Bender. If a large number of tires are to be bent it will pay to work up a tire bender. A simple one is made as follows. The frame consists of four 2"x2" pieces fastened together in two pairs. To do this nail a 4" board across the ends of each pair keeping the parts of the frame 4" apart. In the center of one fasten a wood cylinder or roller 2" in diameter. At the center of the other part of the frame fasten two 4" rollers of hard wood. The centers of these rollers should be 4½" apart. The two large rollers should turn on their spindles while the small one should have a piece of ½" iron run thru it and riveted so that the two parts turn together. One end of this shaft is left long enough to be bent into a crank for turning it and thus rolling the tire back and forth. With the rollers in position one end of the frame is hinged together while the other is fitted with a screw to draw the two parts together. A C clamp will do for this part. In bending up tires care must be used and not too much pressure applied at one time else the tire shall be bent unevenly.

Boxing. These are cut 1⅜" long. Use ⅜" extra heavy steel pipe. Place boxing in wheel with a 11/16" washer on each side of it. Place on anvil and rivet the edges of the pipe down over the washers, working up both ends together.

The burs are removed from the inside of the boxing by means of the file or by drilling.

Other parts are sufficiently described in the drawings.

Assembling. First bolt axles to the sills. Fasten on the front braces with screws. Fasten on the front boards which hold the sills together. Be certain axles are square with the sills.

Fasten on steering rod support and assemble steering rod in position.

Fit a board 20″ long between the sills at the back. A strip at each end of this is fastened up to the sills by means of screws and help the axle to support it.

Place on gear wheels.

Place on steering wheel. Hold this firm with locked nuts and washers.

Assemble brake rods and beam. Bolt these in position.

Fasten on brake levers.

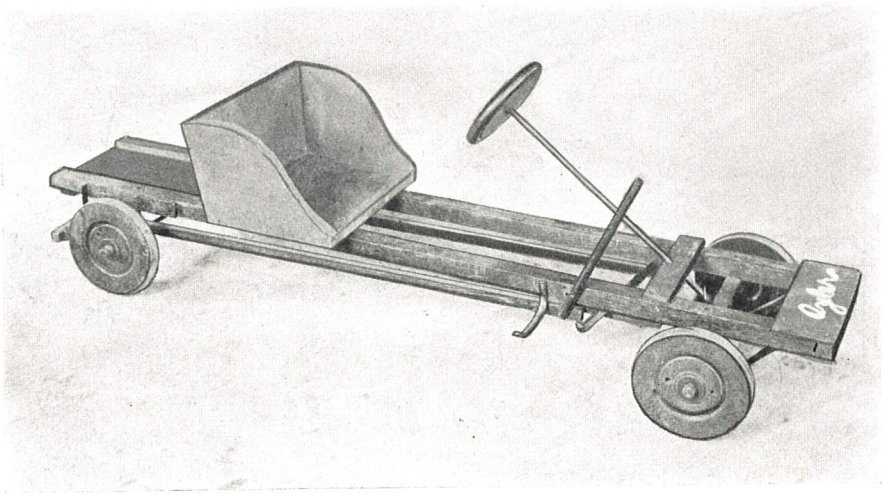
Seat. This is put together with a beveled butt joint. Use nails in fastening together. The seat may be fastened in position with screws, down thru the bottom, but a better method is to use strips as suggested in the drawing. The inside of it may be upholstered if desired.

Painting. Paint the coaster any desired color or colors, such as red for the gear with the seat and trimmings in green. While one coat is sufficient ordinarily several coats will add much to the finish of the job.

Use heavy oil or better still axle grease on the spindles.

With care the finished coaster will give a great deal of service and any part wearing out can easily be replaced.

NOTE—Another article by Mr. Kuns will appear in an early issue.—Editors.



A COASTOMOBILE READY FOR USE.

REPAIR WORK IN INDUSTRIAL ARTS

Frederick G. Bonser, Teachers College, Columbia University

THERE is a strong tendency in many schools and systems to make projects in repair work the major part or even the whole of the industrial arts course in the upper grades and early years of high school or in the junior high school where organized. This was advocated for Springfield, Illinois in the Report on the Springfield Survey, made under the direction of the Russell Sage Foundation. Repair work makes up a large part of the Training School course and the course for the training of teachers in industrial arts in the State Normal School at Fitchburg, Mass.; it is a very significant part of the Gary plan, and it makes up the whole or a part of many courses in different parts of the country.

The work includes projects in great variety—school and house repairs in wood, plastering, kalsomining, painting, paper hanging, plumbing, steam fitting, mending broken windows, repairing electric bells and systems, mending ventilator and drain shafts and pipes, masonry repairs in stone, brick, and concrete, furniture repairs, book mending, cobbling shoes, repairing clothing, repairing miscellaneous implements and machines as wheelbarrows, lawn mowers, churns, washing machines, carriages, automobiles, and almost every other form of repair work found in the school or home environment. The range of work is very wide, and even the terms "Jack-at-all-trades" and "amateur-handy-man" are applied as satisfactory designations of what the work is intended to make of the boy. As a result of the work he should be able to tinker and repair at almost any household or farm occupation involving materials and mechanical processes.

The work appears to be determined primarily by the exigencies of the environment. There is no system or gradation of work. Whatever needs to be done is done. When the school or home requires no repair or construction work, the interval is filled with projects the individual pupils desire to make.

Advantages and Values of the Work.

The most obvious advantage of this plan is that it gives concreteness and reality to the work. Assuming that boys are enthusiastically interested in the conditions of the school building and grounds and of the household equipment and accessories, the necessary incentive to hard work would follow. As a matter of fact, it has occasionally been found on inquiry that the boys work harder and better when making articles for themselves in the intervals when the environment provided no projects than when working on school jobs.

To enable the boy to become a kind of general handy man, ready on occasion to turn to almost any form of simple repair work, or to lead him to take a more intelligent interest in such activities or in their direction and management, this kind of work is admirably adapted. It requires nothing whose practical value is not immediately and clearly seen. None of the old time exercises for "training" or "disciplinary" values have to be suffered by the pupil. The broad variety of possible projects covers a large proportion of the simpler problems and hand processes included in present day industrial repairs, and well typifies the general method of work in these respective industries as carried on a half century ago. The work does not usually last long enough in any one field to provide the development of much skill, so there is no emphasis upon skill for its own sake.

As a means of vital motivation for studies leading out to the larger and more characteristic industrial processes, problems, methods, and relationships of today, it is excellent. As a means of leading naturally as an intelligent and interesting approach to the most important phases of several of the other subjects of study, and as a means of developing for industrial arts a worthy content of its own, this work has very high value. One of the most important and also one of the most neglected phases of most studies is that of providing life contacts full of meaning and significance thru appreciable approaches and forceful, everyday illustrations. Problems in repair work and construction called for by the immediate environment afford these in the study of the industrial arts.

Points of Weakness in This Plan of Work.

The great weakness of the work as it is usually offered seems to be in that it stops so nearly where it begins—its units are fragmentary and largely devoid of any body of thought content, either organized or unorganized. Compared with other subjects of study, this work would scarcely be able to maintain a defensible respectability in content or organization. Its character is so distinctly amateurish that its content cannot be otherwise than superficial.

From the almost entire lack of sequence or organization, one may reasonably infer that the philosophy of the work is that it doesn't matter what the boys do in these eight or ten hours a week just so they are busy at manipulative work. There is little evidence of any consideration of relative values. One may reasonably ask, "How does this work differ in character and value from that which a boy would normally have if he were a kind of general utility boy not in school?"

The work is defended in part on the ground that it furnishes the same kind of training gotten by boys growing up on a farm. But in how far is this true? On the farm the boy is constantly thrown upon his own resources—he meets many problems alone and he must solve them for himself. He must also solve many of the problems immediately and with whatever resources are directly at hand. He is forced to meet each problematic situation by drawing upon past experience and all of the ingenuity and mental acumen he possesses. On the other hand, in the school the boy has a trained workman to lean upon who does much of the thinking and who carries most of the responsibility. Furthermore, the country boy is gaining first-hand knowledge and experience of a vocation *in its entirety*—he is doing and seeing

repair work and small mechanical jobs in their relationship to agricultural life and producton *as a whole*. In the type of repair work found commonly in the schools there is no such appreciation of relationships and of industrial production as a whole.

It is not typical today of the country at large for homes or institutions to make their own furniture; it is not typical today even in country districts for people to do their own cobbling; and in country districts *only* is it common for men to do repair work other than that of a most simple and ordinary kind. With the present division of labor, one can buy all of these services more cheaply than he can render them for himself, even if he knows how. It is better economy for most people to hire a cobbler to mend their shoes, a plumber to repair leaky plumbing, and paper hangers and painters to decorate their homes. The very fact that boys have no first-hand acquaintance with even the common forms of household repairs indicates how completely the specialization of such work has taken place and how fully it has gone out of the "domestic" stage of industry. As most of the spinning, weaving, and garment making have left the home for the shop, so also has much of the repair and construction work. Turning back the wheels of time is no more desirable in one of these fields of industrial activity than in the other.

Notable Omissions of Relationships in the Work.

Applied design occupies but very little attention, and there is usually almost no study of applied mechanics or electricity in direct relationship to the industrial projects. The projects themselves seem to be the beginning and the end of the industrial studies.

There is almost nothing of the sources of industrial materials, nothing of the historical development of industry, nothing of the organization of manufacture upon a piece work basis, nothing of the problems of labor and capital growing out of industrial production, nothing of the multiplicity of machines in present day industry with its division of labor, high specialization, and automatic machine operation, nothing of the physics of machines and processes, and nothing that is really typical of the industrial work of today excepting repair work and some of the simpler forms of construction still carried on thru hand processes or by very simple machines.

Leaving out all of the important relationships to which this form of work might lead reduces the problems in thinking to a minimum and puts the emphasis upon the very least important phase of the work from the standpoint of educational values.

Appropriate Place and Emphasis of Repair Work.

"How is practical work to be made educative?" is the question that must be answered. While the plan of using repair work holds to the idea of learning by doing, there is much doing with very little learning in many of the problems. The very values of the school as an institution lie in the organization of the acquired experience of the race so that its contributions may be gotten altogether more quickly than by the slow process of learning by doing *only*.

As motivation and means of approach to principles, conditions, problems, and values, practical repair work has a most real and vital place. For illustrating principles in application, concreting experience, and clarifying and objectifying ideas it has very great value. It is not that the work is not worth while and exceedingly important, but that it is so limited to problems which, in themselves, are so relatively unimportant. In that it omits a consideration of principles, offers little opportunity for organizing ideas, makes nothing of the very important relationships heretofore suggested, it would seem but a partial and inadequate solution of a problem so rich in possibilities. The work should be connected with the large and important body of thought and experience in the fields of industrial design, industrial science, industrial geography and history, and industrial practice as found in the real world of large industrial production of the present time.

Appropriately evaluated and emphasized, this form of practical work should become the means of approach and the illustration of facts and principles of present day industry. When it accomplishes this purpose and also leads to studies in the evolution of industry which will give a sense of relative values and of perspective in the fields of industry and related civic and social life, repair work will amply justify itself as a most important phase of the study of the industrial arts. But there must be no confusion of means and ends.

NO man ever did, or ever would, encourage cheapness at the ruinous expense of unfitness, which is always infidelity, and is dishonorable to a man. If I want an article, let it be genuine, at whatever price; if the price is too high for me, I will go without it, unequipped with it for the present—I shall not have equipped myself with hypocrisy, at any rate. This, if you will reflect, is primarily the rule of all purchasing and all producing men. They are not permitted to encourage, patronize, or in any form countenance the working, weaving or acting of hypocrisy in this world.—*Thomas Carlyle.*

TYPOGRAPHIC DESIGN: LAYOUTS

Fred Victor Cann

(Second Article)

THE subject of layouts is a very important one to the beginner, and one that needs careful study.

Advertising and typography today are not only arts but sciences and the student cannot do better than to study the best display he can find in magazines, books, etc., for ideas and suggestions in his work.

It is suggested that the student make a loose leaf collection of printed ideas of all kinds and descriptions of his own as an invaluable source of supply in case of need.

The subject is so endless that not more than a few suggestions can be given. To the layout man of any invention all that is needed is a suggestion, and he will do the rest. The chief requisites for successful layout work are a vivid imagination and sufficient skill in drawing and arrangement to carry out any ideas that may be submitted.

There is no end to the different kinds of layouts that may be made, each individual problem requiring special treatment. The ability to sketch readily, giving size of page or job, with size of type, are the chief essentials for laying out work. In case an original design or artistic piece of work is required, the work should be done by a professional artist or designer. For ordinary layout work, such as book pages, advertisements, posters, and title pages intended for the compositor, all that is required is a rough sketch giving size of page, margins, size and style of types, grouping of lines and cuts, etc. See layouts in accompanying plates.

Margins.

The scribes who lettered by hand in the days when books were scarce and the making of one was the work of months, sometimes years, had a method of laying out margins that would be hard to improve upon today. If the student will examine carefully some old hand-lettered manuscript or book, done on vellum, he may see the layout lines, usually in a light colored ink. Many of them are so well preserved that they may be plainly seen today.

This method is shown in the accompanying plates 1 and 2. They evidently measured on the edge and corners, and ruled with a very light colored ink, lettering with black, and illuminating with water colors and gold. This method is still practiced by the layout man of today, and is worthy of study by the student of modern typography.

As margins, to a certain extent, make or mar good book work, it is important that we consider them at the

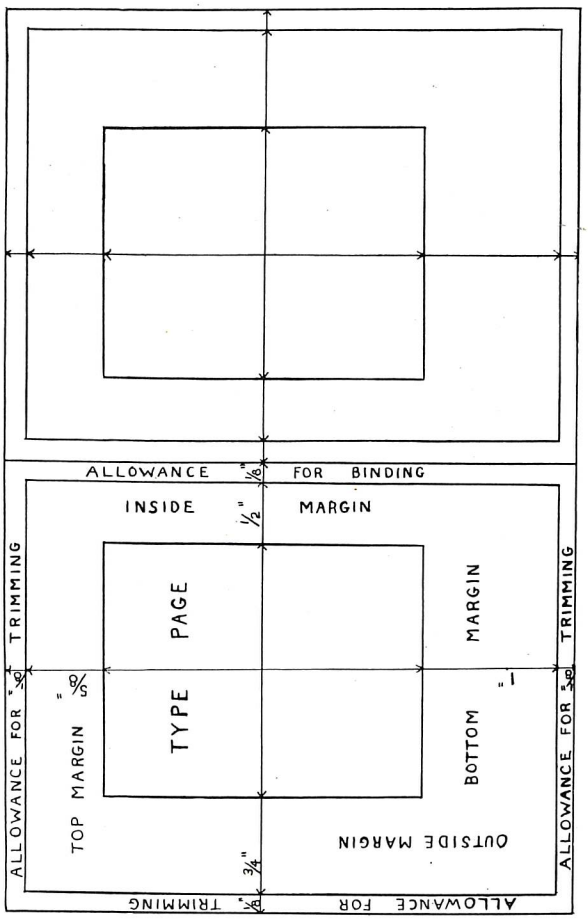


Plate 1. Centering Method of Laying Out Margins.

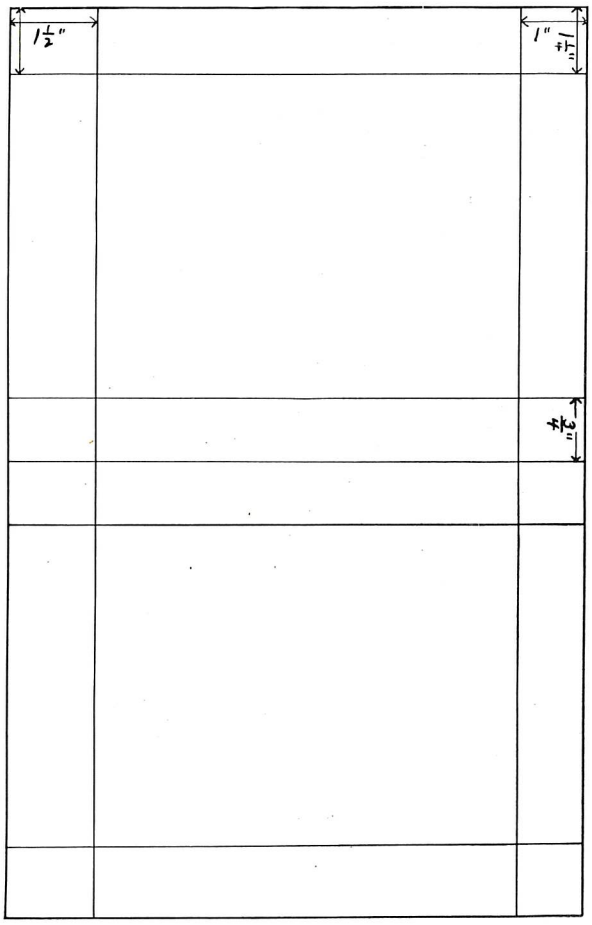


Plate 2. Edge or Corner Method for Laying Out Margins.

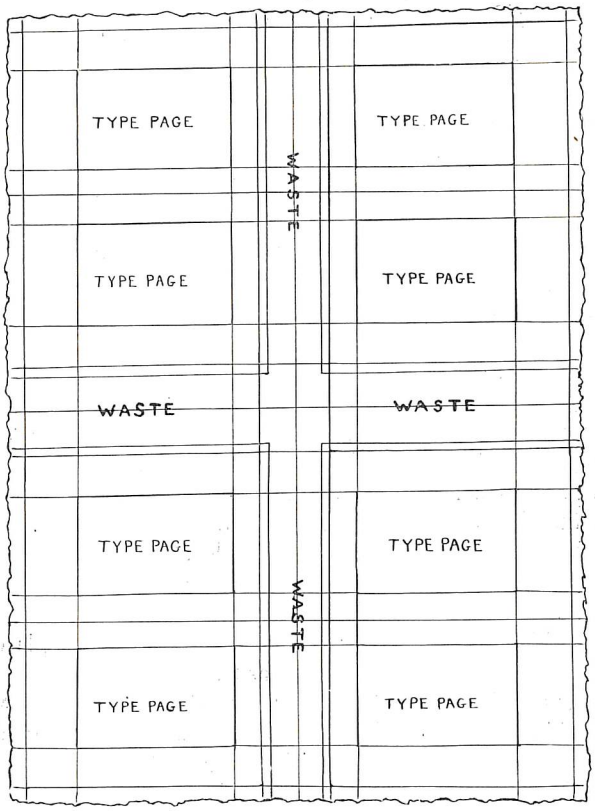


Plate 3. A Layout for Deckle Edge Paper.

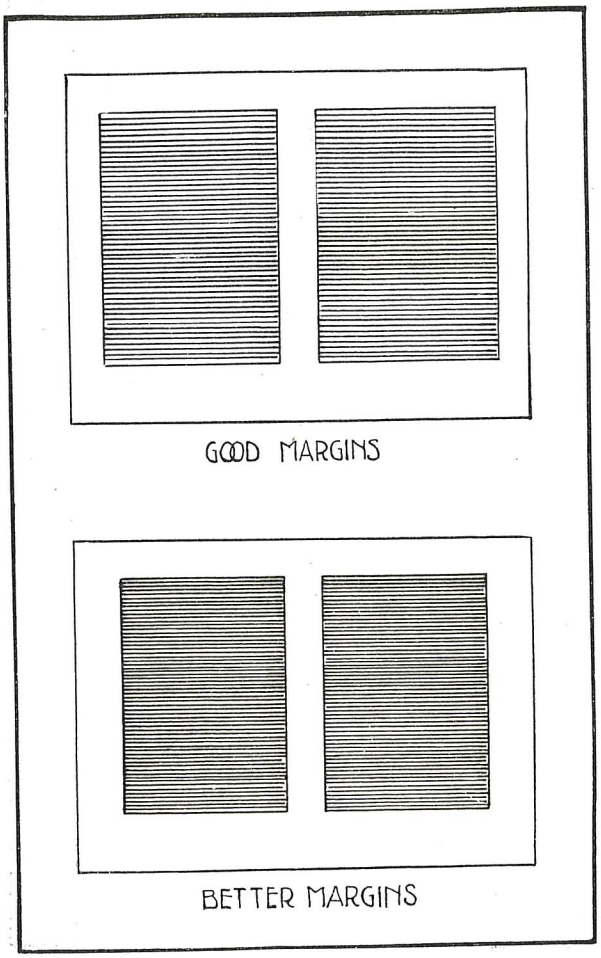


Plate 4. A Suggestion for Improving Margins.

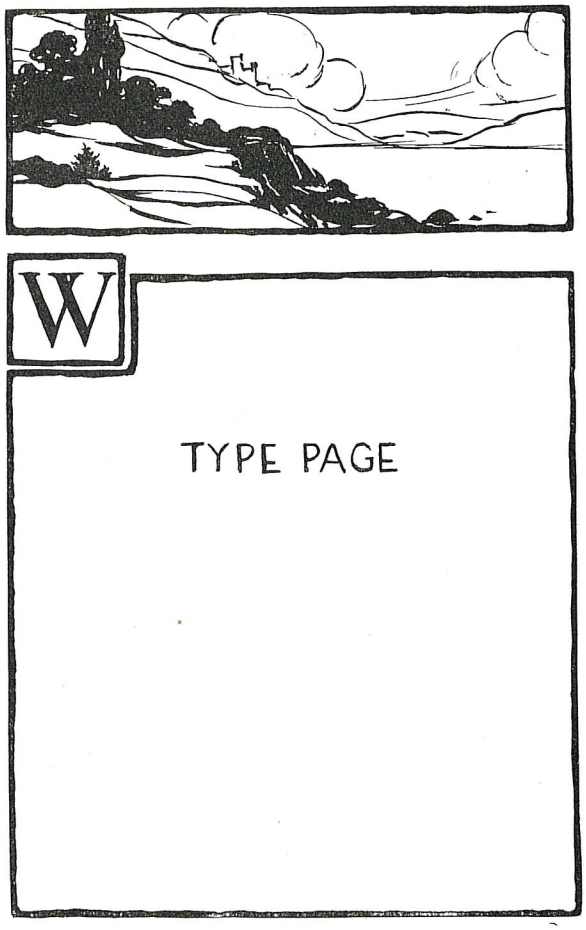


Plate 5. Ornament and Border for Type Page.

outset. The methods suggested in diagrams 1, 2, and 3, work out fairly well. First center the type page, leaving more margin at the bottom than at the top, allowing for binding and trimming.

A Rule for Margins for Book Pages: Beginning with the binding edge of the page, make margins in this proportion: Left edge, 7; top, 8; right edge, 9; bottom edge, 11 picas, and allow ¼ inch for trimming. This rule applies to ordinary book work only. Sometimes even margins are required, and often wider margins are needed for more artistic work. See plates 1, 2, 3, 4, margins.

Page Advertisements.

Follow directions given above for margins; when laying out book page work, block out groups of words, sentences, paragraphs, and decide on arrangement of different parts as to their relative importance for display position. Pick out the style and size of type to be used, and carry out the whole page in any appropriate style, being very careful in the arrangement of the lines, and the spacing between the lines to separate groups of words, sentences or paragraphs.

It is economy in both time and labor, to plan out the page as a whole, making pencil layouts, and even dummies when necessary, before setting up the job in type. Too much emphasis cannot be placed upon this layout work. See plates of layouts for page advertisements.

Plan each job carefully with light pencil lines, deciding on the arrangement of parts first.

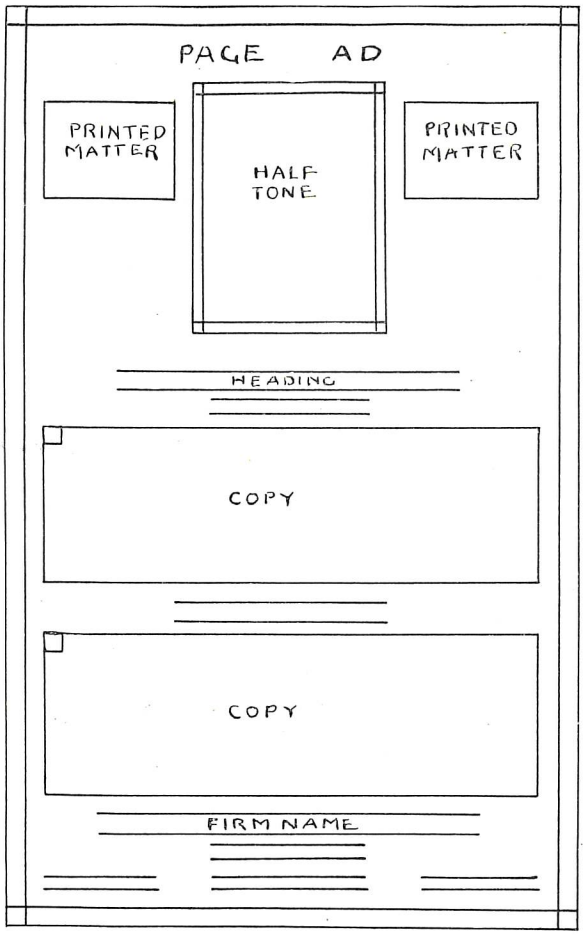


Plate 6. Suggested Layout for a Page Advertisement.

Use ornaments or borders sparingly. When they are used, be sure that they are appropriate for the subject of the text involved, and that they do not dominate the type page, but rather accent its value, and serve as a background to throw up the type in strong relief of black and white. Study advertisements in magazines, newspapers, booklets, and pamphlets. Pick out the best, analyze each and decide why one is good and another bad; give your reasons in each case.

Proportion.

Proportion, when used in the sense of page proportion means simply the comparative length with the width. The printer is influenced to a certain degree by the standard sizes of paper. He figures the number of pages he can cut to good advantage from regular stock, allowing from ⅛ inch to ½ inch or more for trimming. This is permissible from an economical standpoint, but not always from an artistic point of view. Wide margins are necessary for good book page work; binding should be allowed for, also trimming, unless a deckle edge is wanted. See plate 3.

Proportion is hard to define and much harder to make rules for. In page work any size that is not freakish is acceptable, but not always good. The length should be twice the width, is often given as a rule, and holds in many cases,—but not always.

It is often necessary to reduce or enlarge a drawing for reproduction, to fit a given page or space. Plate 8 shows the method usually followed by artists when

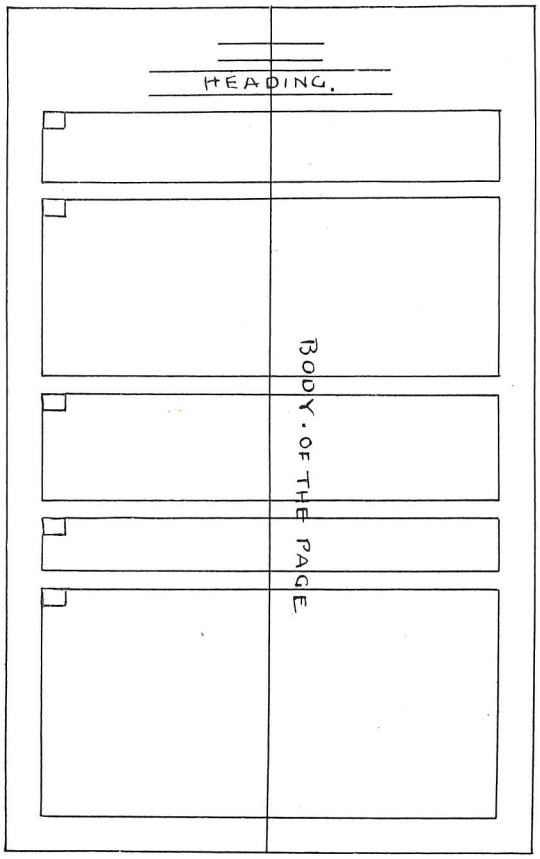


Plate 7. Layout for a Page Advertisement.

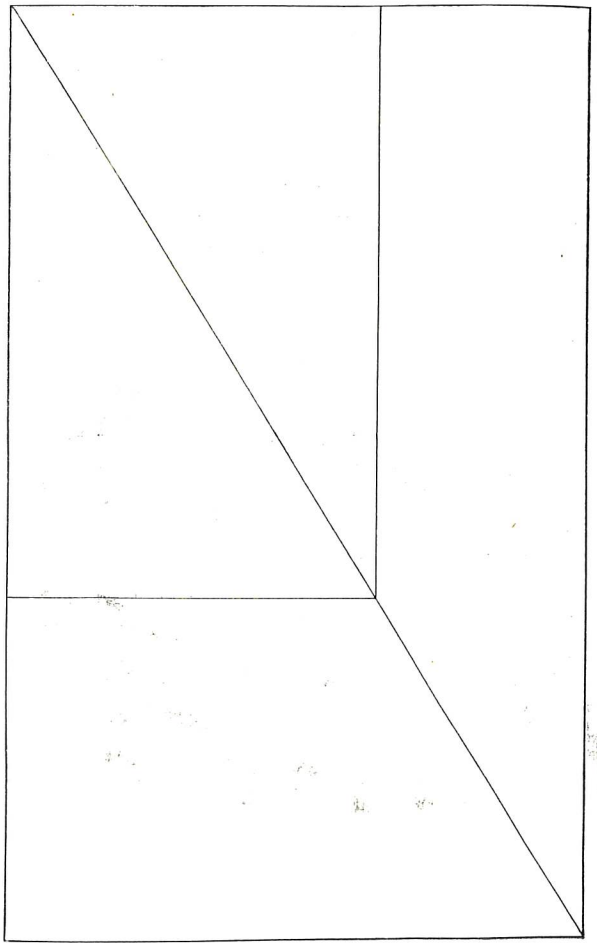


Plate 8. Artist's Method of Determining Size of Reduced or Enlarged Drawing.

reducing or enlarging a drawing or design. Plate 9 illustrates another method of enlarging or reducing a square or a rectangle. Whenever it is necessary to enlarge or reduce a drawing, follow either of the methods shown.

Suggestions for Problems.

1. A group of lines 2 inches high, by 3 inches wide, is to be placed on a cover 6 by 9 inches. Draw a diagram showing them placed in good position with margins well planned. Scale ½ inch to 1 inch.

2. Draw a diagram dividing a page 5 inches by 8 inches in proportion 3 to 4. Use diagonal method as illustrated under Page Layouts, Plates 8 and 9.

3. Place a panel 3 inches by 4 inches on a cover 6 inches by 9 inches. Draw a diagram showing the panel placed in good position.

4. Two groups of reading matter are to be placed on a cover; upper one 4 inches by 2 inches, lower one 2 inches by 1 inch; size of cover 6 inches by 9 inches. Make a sketch showing them balanced and well placed.

5. Make a sketch showing well proportioned margins for a book, size of page 5 inches by 8 inches, size of type matter 20 picas by 35 picas. Draw a diagram showing two pages of open book, with margins in proportion of 2, 3, 4, and 5 picas. Allow for binding and trimming.

6. Draw diagram showing well placed type matter for business card. Sketch freehand in outline only. Size of card 4½ inches by 2¾ inches.

7. Draw a diagram of page 6 inches by 8 inches with type matter running around four cuts. Size of cuts to be ¾ inch by 1½ inches; 1½ inches by 2¼ inches; 2 inches by 2¼ inches; and 2 inches by 2½ inches, respectively. Space between descriptions of each cut, by space wide enough to separate groups or paragraphs. Allow for heading and captions.

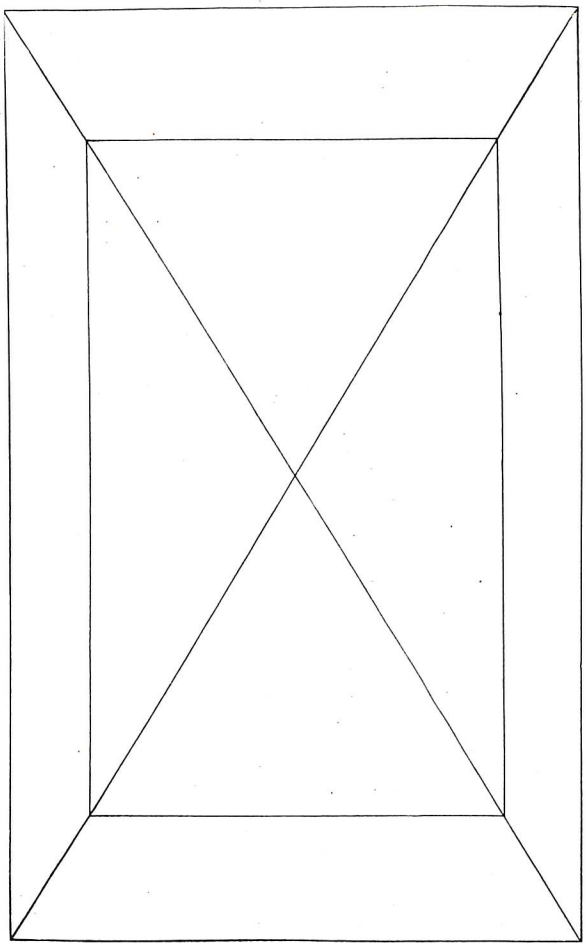


Plate 9. Another Method of Determining Proportions in Reducing or Enlarging Drawings.

8. Plan a chapter book page with initial and head piece suitable for a novel or book of poetry, of any well proportioned size. See plate 5.

(To be continued.)

Trying Out the Pipes. Boys Making Concrete Foundations. Girls Using Swings.

School Playground Apparatus made by Manual Training Class, Wilmette, Ill. Mr. L. J. Mitten, Instructor.

ORGANIZATION OF TEACHING MATERIAL

Fred. D. Crawshaw, University of Wisconsin

(Eighth Article)

EXAMPLES FOR THE SUPERVISOR OF MANUAL AND INDUSTRIAL ARTS.

A GENERAL outline prepared by a supervisor for the guidance of teachers, should be supplemented by at least three serviceable means for reorganization into teachers' daily plans. These means are: (a) Teachers' Meetings; (b) Written Suggestions for Methods of Teaching; (c) Supervisory Visits.

The three types of outlines illustrated in the last two preceding articles in this series fall in the "general outline" class. They are detailed and dictatorial only as regards media to be used and sequental groups of problems from which pupils will make individual selections.

Detailed and dictatorial outlines may not need the helps suggested under a and b above, altho those of such a concrete nature as would ordinarily be given in Teachers' Meetings would substantially supplement any type of outline. But in any event the constructive helps possible to be given at the time of a supervisor's visit to a classroom (included in c) and those growing out of such a visit should be regarded by a supervisor as imperative. He needs the means of visits to judge of the effectiveness of his outline and to make it serve all teachers as completely as possible. It should render a peculiar service to each teacher depending upon her personal equipment and the needs of the community in which she teaches.

The first of the three supplementary means suggested above, (a) was illustrated in the April article in this series. Six teachers' meetings were outlined, each to be organized by a supervisor for all teachers doing similar work. Other meetings for teachers of special subjects and for those new in service who need specific instruction upon type or other required problems should be held when needed.

Below are two examples of the second supplementary means, (b), "Written Suggestions for Methods of Teaching." The first of these examples is taken from a pamphlet, issued by the Board of Education of Seattle, Washington, for the aid of teachers using the fourth-grade charts which were illustrated in the April, 1915, number of this Magazine.

Animals in Outline.

1. *The Bear.* Have tagboard patterns of the bear made by the teacher or some capable child. Show how the pattern is laid on the wood, considering strength of grain and economy of material. *Caution the children to hold saws correctly at right angle to the board. Call attention to the teeth of the saw, how the vertical movement does the sawing and no pushing forward is necessary. After sawing out the shape it should be nicely sandpapered, using a small piece of sandpaper over a block.

2. *Other Animals.* Everyone in the class should make at least one selection from these other animals and saw them out in the same way as the bear. The more capable pupils may saw out two or more.

3. *The Stand.* Have the class make a stand for the bear, dictating the measurements as given on Plate 1. Those finishing may devise different stands to suit animals made, using scraps of wood.

The second of these examples gives the brief teaching suggestions accompanying a course in Furniture Making, such as was given for grade nine in the October, 1914, number of this Magazine.

Suggestive Methods of Teaching Course in Furniture and Cabinet Making.

Group I. Collect catalogs giving good illustrations of furniture. Reference reading in books on woodwork. Consider in detail the handling of tools. Short cuts. Methods of duplication. Economy of time in systematic methods.

Group II. Consider the good and bad in design. State principles in designing which can be used by class. Outline steps in designing some particular piece of furniture. Emphasize necessity of working over a design until it is as nearly perfect as possible. Work for a growth in appreciation.

Explain use of machines. Dangers. Give cautions. Explain order in which machines should be used. Economy of time in use of machines.

Group III. Required readings. Shop trip to furniture factory, with report. Consider methods of factory not possible in school shop. Classify woods as soft, medium, hard.

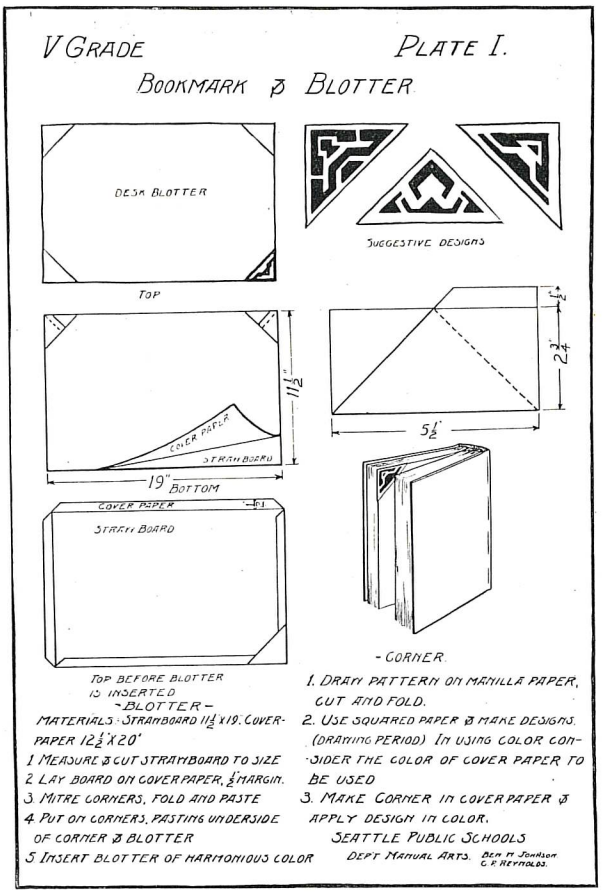
Group IV. Differences between cabinet and furniture construction. Details of clamping and fastening. Schools and periods of design. Use of heavy cabinet machinery. Factory methods.

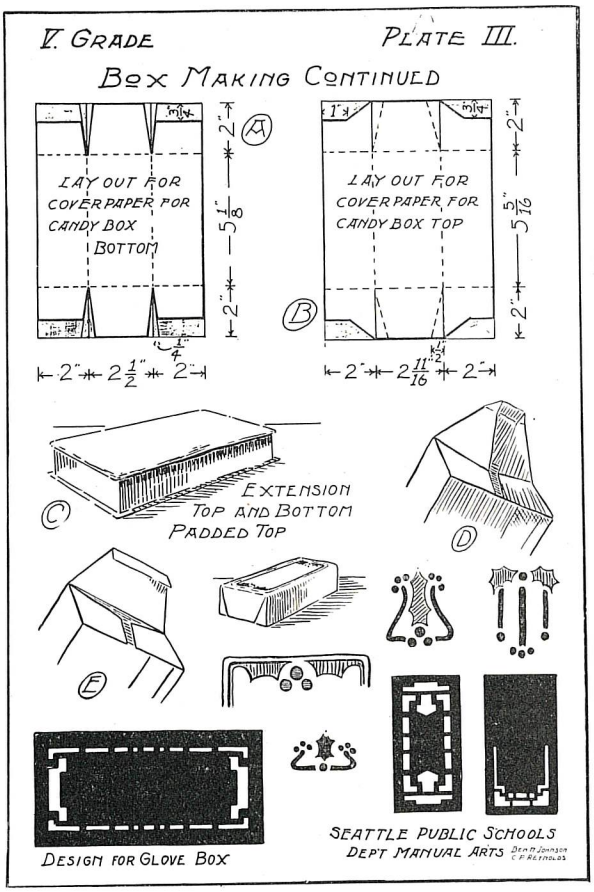
Group V. Talks on finishing. Samples of finishes. School and commercial manufacture of finishes. Classify finishes and their ingredients.

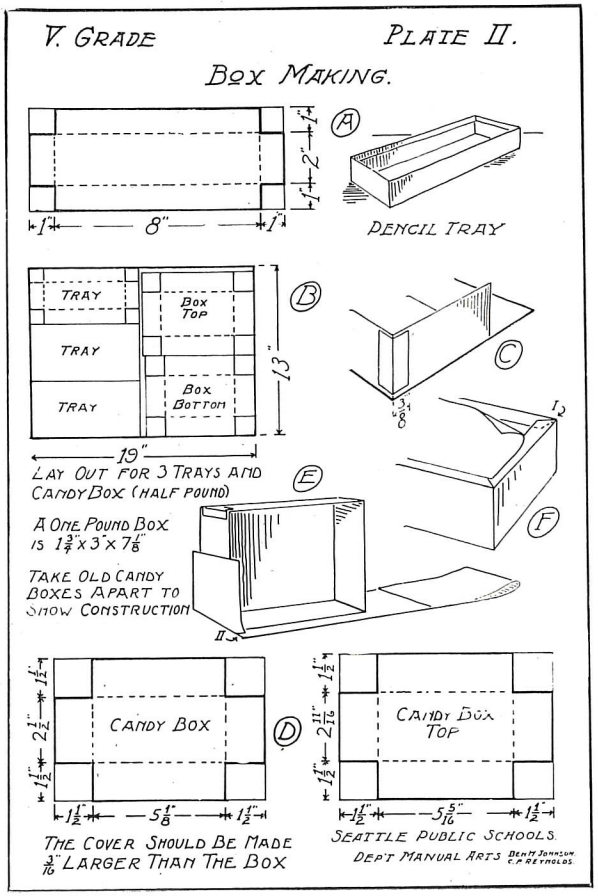
The third means of supplementing supervisor's outlines, whether detailed or general, are supervisor's visits to classes. These should be made as regularly as possible but not always at a specified and previously announced time. When the time of a supervisor's visit is known by a teacher there may be a tendency both on the part of teacher and pupils to make all conditions as attractive as possible. The unannounced visit, on the other hand, is one for which no special preparation is made and consequently normal or more nearly average classroom conditions are likely to obtain.

Supervisor's visits should be as informal as possible. For this reason it is wise for the supervisor to make them when other adminitrative duties than those of supervision demand his presence in any particular building. The very idea of supervision creates unnatural classroom conditions, the result of which will almost certainly form false impressions in the mind of the visitor.

*NOTE.—This is a sample of the instructions given for each of the figures represented on the Charts referred to. This instruction is for one figure on one plate only.







To be as "natural" as possible should be a dominant aim of a supervising officer at all times, not the least important of which is during a classroom visit.

Perhaps no one thing that a supervisor does demands more careful planning and execution than does his visitation work in classrooms. He must be tactful in the extreme that he may not overawe pupils or teachers. He must be sympathetic and yet by word or act he will be critical. The critical performance, however, must be constructive. It will usually be encouraging in character and will always take the form of helpful suggestions. These will be given sometimes thru questions, sometimes by means of class instruction (tho very seldom) and sometimes by closely observing pupils' work with a view to making some comment during or following the class period which will act as an incentive for greater effort or a change of method. In accepting his position a supervisor obligates himself to use *these opportunities to serve*. Sometimes the pupils and sometimes the teacher but more often both, are the object of his altruistic motives. These remain always the same regardless of the means which may be classified in terms of visits as follows:

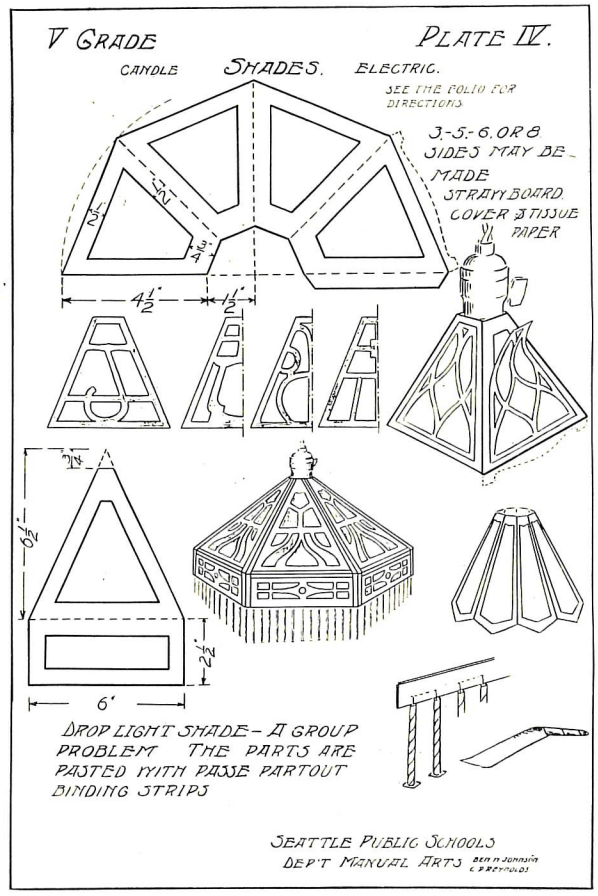
1. Visits when the supervisor conducts a class exercise.

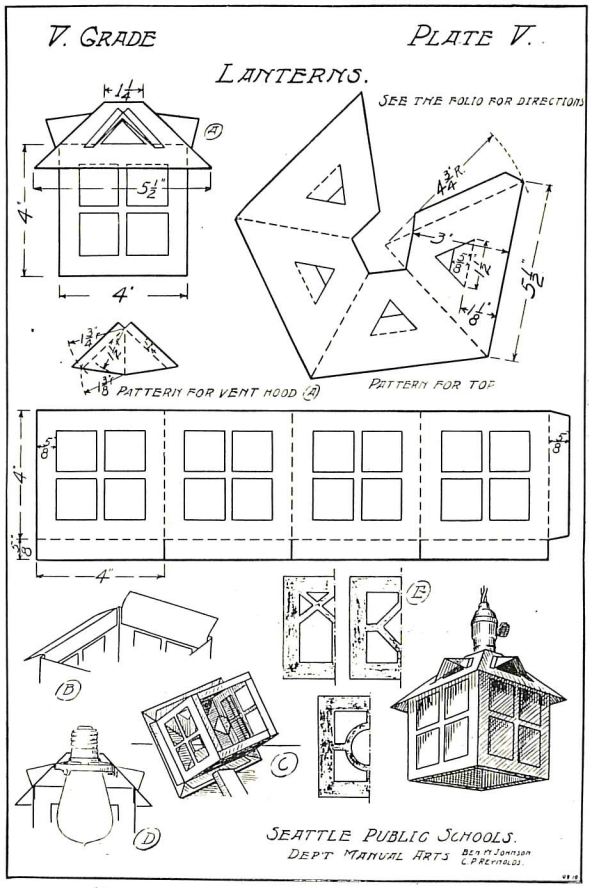
2. Visits when the supervisor observes and makes suggestions.

3. Visits when the supervisor will review work accomplished by means of:

   a. Reviewing exhibits.

   b. Conducting a quiz.





In any one of these types of visits the supervisor's purpose will often be the enlightenment of the instructor upon some point rather than the testing of the pupil's knowledge or power. In whatever service the supervisor may render at the time of a visit to a classroom, he will doubtless attempt thru *direct* contact with pupils *indirectly* to help the instructor.

The following analysis of the first type of visit suggested above may serve to show the care which should be exercised by one who would accomplish much at the time of a visit.

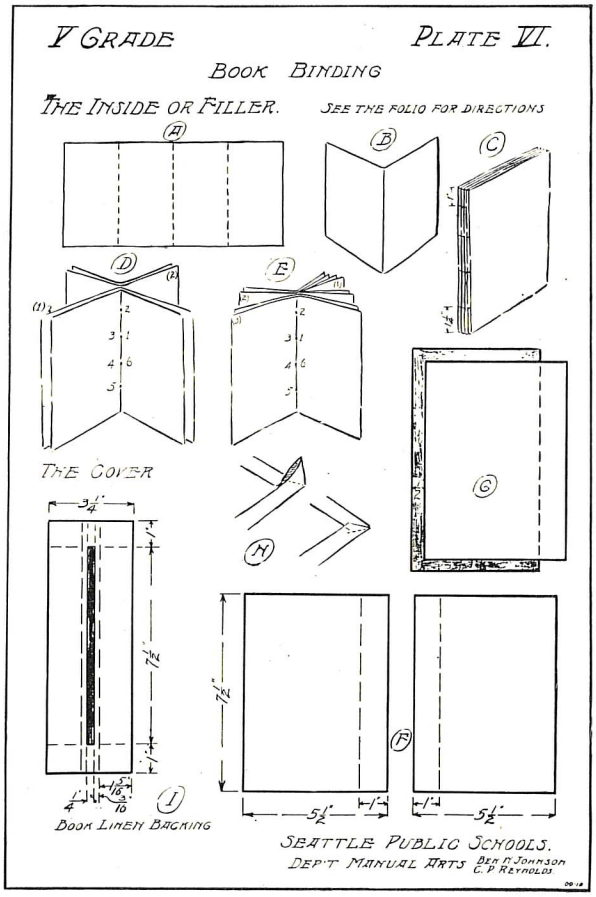
Analysis of Supervisor's Visit When He Conducts a Class Exercise.

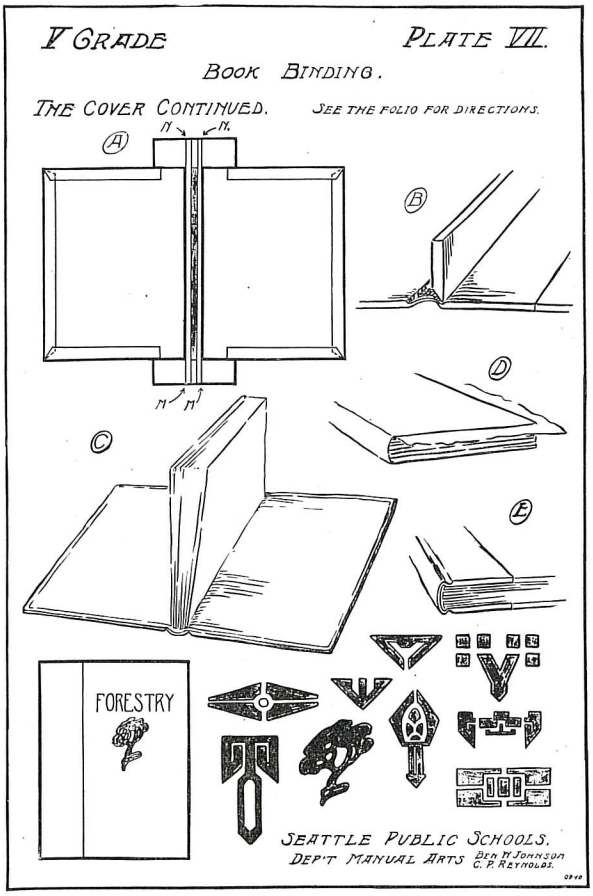
Advantages:

1. Gives new teacher in her own environment definite suggestions regarding teaching methods.
2. Gives old teacher opportunity to select a method which she has not used.
3. Establishes comparative values for different teaching methods.
4. May raise standard of accomplishment for teacher (administrative devices and teaching "tricks").
5. Gives pupils new points of view which may result in greater individual initiative and better technical results.

Disadvantages:

1. Humiliates teacher.
2. Reduces pupils' confidence is teacher's ability.
3. Breaks continuity of teacher's effort and confuses pupils.
4. Establishes new standards but not necessarily better ones.





5. Introduces thru "personality" a disturbing element.

Perhaps no better conclusion may be drawn upon the relation of a supervisor with teachers and pupils than has been made by each of two supervisors of international reputation, James P. Haney of New York City and Henry Turner Bailey, Editor of The School Arts Magazine.

Mr. Haney says "He," speaking of the supervisor, "must be a teacher in the broad sense of the term, one who leads others to a realization of the excellence and worth of the subject he presents; a teacher not necessarily demonstrating some lesson, but one acting as an animating agent, aiding not only by direct suggestion, but by general guidance and stimulus to higher professional life."*

Mr. Bailey says: "The supervisor whom teachers respect and whose visits they enjoy, the one for whom they will work overtime and never tell, the supervisor whom the children love and for whose sake they will do anything, is one who serves consistently, sympathetically, abundantly."†

Both supervisor's outlines for the guidance of teachers and means of supplementing them have now been discussed. It is hoped that the examples given and their explanation set forth a means of securing rather uniform practice among teachers who may be associated with any individual supervising officer.

It is further desirable, in order to aid those who do not have general outlines for particular lines of work furnished them to give a sufficient number of these to cover the principal industrial activities given consideration in public schools, at least in grades below the high school. In these grades, especially those below the seventh, handwork is regarded as a *means in general education,* whereas in the upper grammar grades and in the high school vocational or technical results are sought and consequently teaching material is more thoroly organized under subject headings. Outlines for high school use may be secured in bulletin form but well organized teaching material for use in the elementary school is not generally available in convenient printed form.

This and the immediate succeeding articles will each include at least one general outline for industrial work in grades one to eight inclusive.

* "The Supervisor," by James Parton Haney, Year Book, Council of *Supervision of the Manual Arts, 1903, p. 15.*

† NOTE.—"The Supervisor's Chief Business," by Henry Turner Bailey, The Applied Arts Book, Vol. 2, No. 2, October, 1902, p. 34.

BUSINESS wants men capable of analyzing. We need that power of concentration which the older schools taught. The world today is full of dazzling things, delightful things, but the power of concentration often is lacking in the men and women who must deal with its problems.—*W. H. P. Faunce.*

PRACTICAL BASKET MAKING

Leon Loyal Winslow, Bowling Green, O.

IT is a fact that much of the craft work included in Industrial Arts courses in the intermediate grades has more educative value than the work usually given as basket making. Yet there is no doubt whatever but that this phase of activity has a justifiable place in the curriculum when taught according to practical methods and with due regard to its industrial and cultural relationships. The industry of basket making is not extensive enough to warrant the giving of a great amount of time to it. Enough attention may be given it, however, to furnish a basis for general industrial insight and appreciation. Our problem is then first, to provide that results obtained in this field shall be obtained with the least possible expenditure of time, and second, to suggest a practical method of procedure.

In the past this work has been neglected and even put aside in many localities because of the length of time required to weave a satisfactory basket. By means of a few simple appliances, however, basket making may be undertaken and taught well in a much shorter time than by the old method, while a certain amount of woodworking may be involved which will add breadth to the industrial arts course; i. e., the construction of basket forms by the pupils. These forms are used by the craftsman basket maker universally and they make the work of weaving easier, more satisfactory, and at the same time practical.

Basket forms are made by using two circular discs made from 7/8″ white pine. The disc used at the top of the form is ten inches in diameter, made with a circular opening thru which the arm may be inserted, Figure 2. The diameter of the disc at the bottom of the form is made one inch smaller than the one at the top, being nine inches in diameter, that the form may be tapered to allow clearance for removing the finished basket from the form. A 5/16 inch hole is bored thru the center of the smaller disc to admit a quarter inch bolt which is used in connection with a wooden block, thru the center of which has been bored a hole of the same size, to hold the spokes tightly against the bottom of the form while the weaving is in process. Two views of these forms are shown in Figure 2. The slats used to connect the two discs are made from 3/8 inch white pine 1½ inches wide and 14 inches long. These slats are nailed to the discs at their ends. The brads used are then set 1/8 inch below the surface of the slat and the entire form is then planed to roundness.

As soon as the spokes are cut to length which in the case illustrated, is three feet nine inches, the basket bottom is started in the hands by the customary method of crossing the spokes. As soon as these are held in place by the *weaver,* the start may be carried on, to the best advantage if it is fastened at the center to a board, as shown in Figure 1. An awl may be used for this purpose. It serves as an axis about which the work may be revolved. This method reduces the difficulty of handling to a minimum and the weaving progresses rapidly.

Fig. 1.

As soon as the start has assumed a diameter of about six inches it is fastened to the bottom of the form, the bolt being inserted, first thru the wooden block and then thru the center of the start and on thru the center of the disc of the form. The nut is screwed on the bolt from the inside, the arm of the worker being inserted thru the opening in the large disc. The illustration shows two boys at work. In one case we see illustrated the method of weaving a start; in the other, the actual basket weaving. Just before the long spokes are turned up to form the sides of the basket, an additional spoke

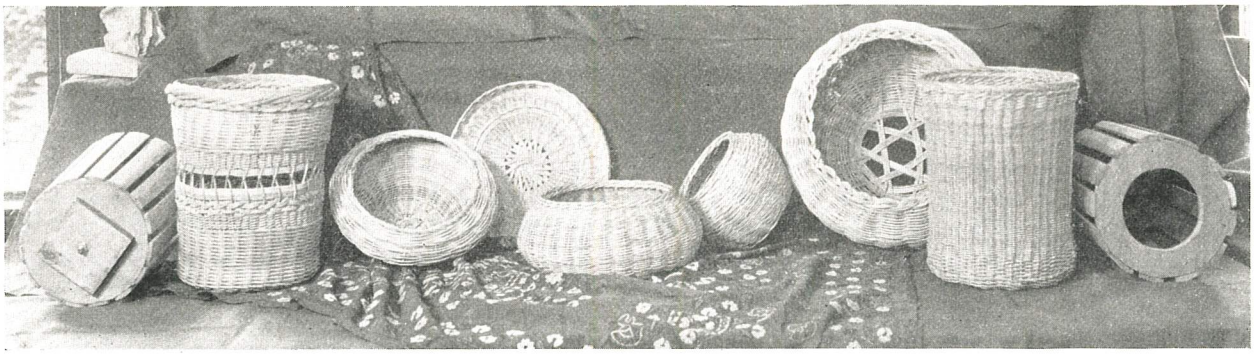
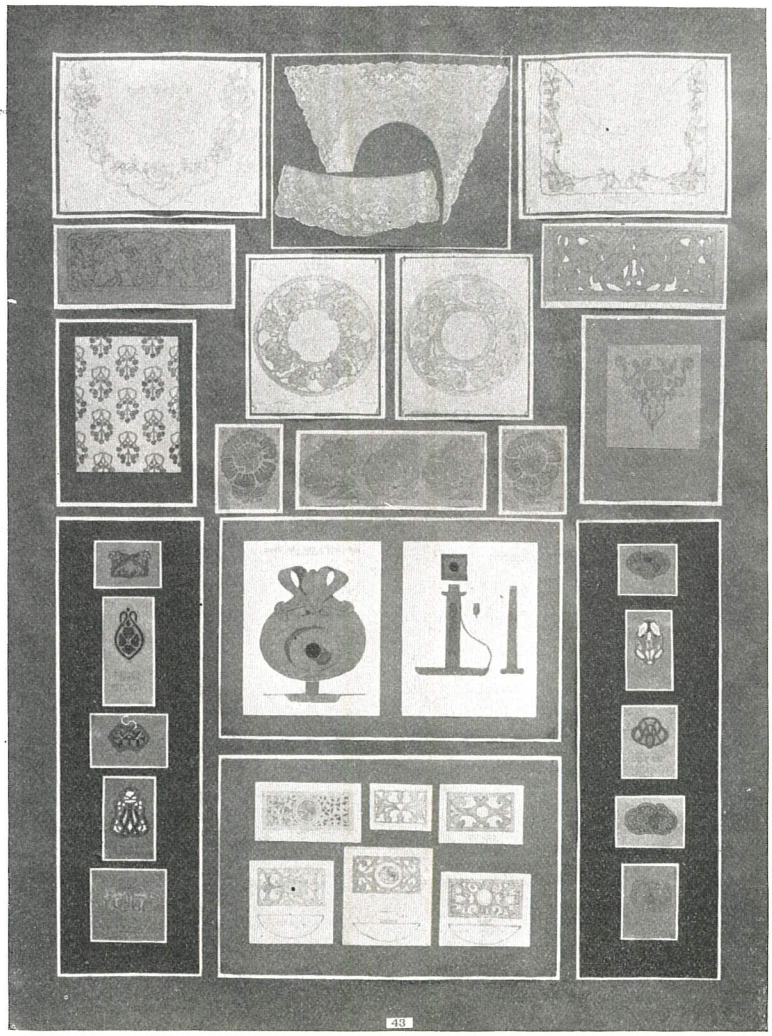


Fig. 2. Baskets made by Students, School of Art, University of Pittsburgh.

is inserted beside each of those already in use. The boy weaving in the illustration is using an idle form as a chair. A weaving table contrived for the purpose of holding the form while it is being revolved further facilitates the process. The construction of this weaving table is simple, it being an adaptation of the saw horse shown on page 100 in William H. Noyes' Hand Work in Wood.

This method of basket making is recommended to all teachers who would make the activity of basket-making worth while. If reed is employed, No. 7 may be used for the spokes, No. 4 for the weavers. Beautiful baskets may also be made from willow and hemp rope, the willow serving as spokes.



Designs Shown at Students' Exhibition, New York City High Schools.
Dr. James P. Haney, Supervisor.

BRICKLAYING—AN INDUSTRIAL ART

Wm. T. Gohn

(Fifth Article)

Bond in Brickwork.

BOND in brickwork refers to the arrangement of brick in a wall, pier, or other form of masonry, in such a manner as to prevent the continuous occurrence of vertical joints, thus binding the whole into a compact mass.

The term "bond" has two distinct purposes, viz.:

(a) To give facial expression to a piece of brickwork.

(b) To bind the several parts of a piece of brick masonry into a complete whole.

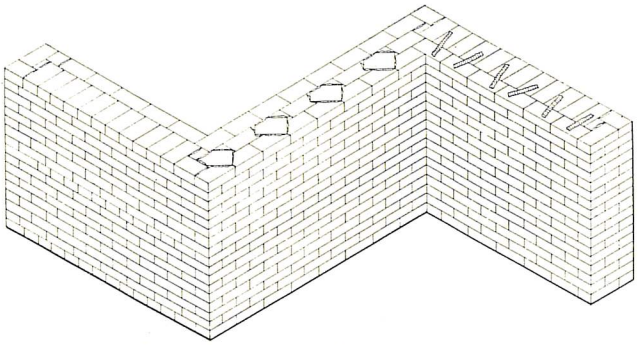
The first is produced by the arrangement of the vertical joints on the exterior surfaces of walls, while the second has reference to the relative lapping of one brick on another.

I might state a few rules which should be adhered to in order to insure a good piece of brickwork:

1. No brick should overlap another brick less than one-quarter the length of the brick.

2. The arrangement of the brick should be uniform.

3. In "common bond" no closure should appear on the face of the wall, other than in the heading courses, and then a three-quarter brick is preferable.



Figs. 1, 2, 3. Three Methods of Tying In.

4. Vertical joints in alternating courses should be perpendicular in line on the interior as well as on the exterior surface of the wall.

5. The dimensions of the brick should be uniform, and of such a size that the length should be equivalent to twice its width plus a mortar joint.

6. Endeavor to make the bricks and mortar adhere as one mass, notwithstanding the fact that the prime purpose of "bond" is to cause the brick to bear the strain of their own weight regardless of whether the brick and mortar have the proper cohesion.

7. It is a good policy to lay all work "out to bond" before laying the brick in mortar. This is done in order to ensure perfectness of bond (referring to facial expression) regardless of how many masons are working on the wall.

8. In case of openings in walls, the brick should be so arranged as to make the proper bond above the opening, and thus have the proper "lay out" of the piers forming the jambs of such openings.

9. Avoid shifting the openings to fit the bond, unless authorized by the architect or superintendent of construction.

10. The foreman should in all cases check up the lay out made by any of the workmen, before the work proceeds more than two courses high at the most.

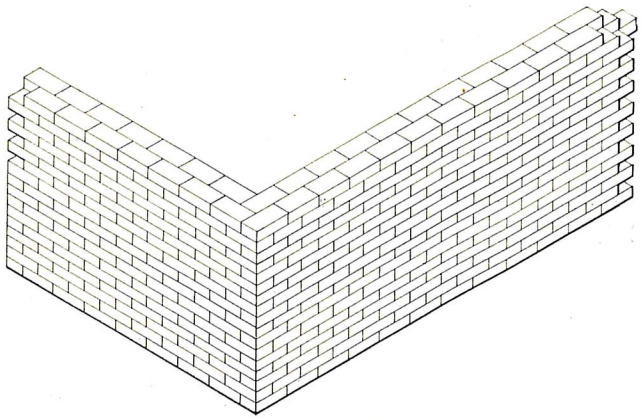


Fig. 4. Running Bond.

There are three methods of bonding the various tiers of brickwork together (referring to the term "bond" in reference to its "tying-in" qualities). They are as follows and in their relative order as regards strength.

1. By the use of real brick headers, i. e., laying the brick so that the head will show on the face of the wall and that its length is perpendicular to the direction of the wall.

2. By using corrugated metal tie-irons.

3. By the use of "diagonal bonding," or "blind headers," laid obliquely to the direction of the wall. (See Fig. 1-2-3.)

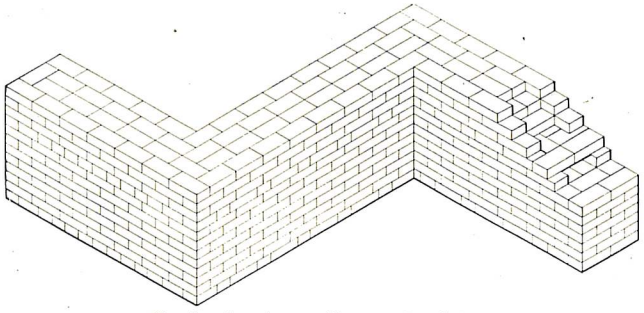


Fig. 5. American or Common Bond.

Where no headers are to appear on the face of the wall, the best possible construction is to combine the use of *metal ties* and *diagonal bonding*. In case great heat be applied to the wall, the *metal ties* would prevent buckling while the *blind headers* would hold in case the ties would rust off, not having been completely and properly covered with mortar.

There are several bonds, used in brickwork to give facial expression, which may be named as follows: Running bond, American or Common bond, Flemish bond, English bond, English-cross or Dutch bond, Garden

bond, Flemish-cross bond, Flemish Spiral bond, and Herring-bone bond.

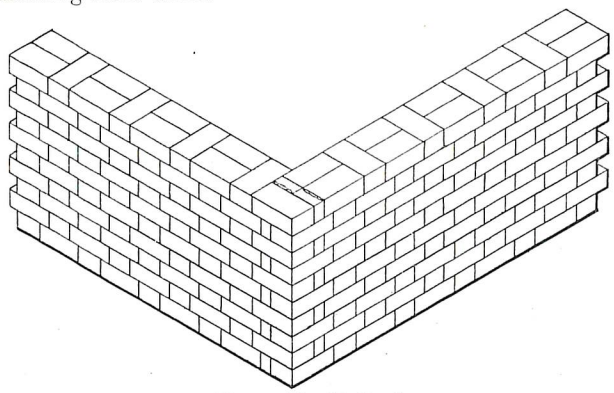


Fig. 6. Flemish Bond.

Taking up the bonds in the order in which they are named, let us discuss Running bond. In this form of brickwork no headers are allowed to show on the face of the wall. This bond derives its name from the fact that all the brick used for facial expression are stretchers, and

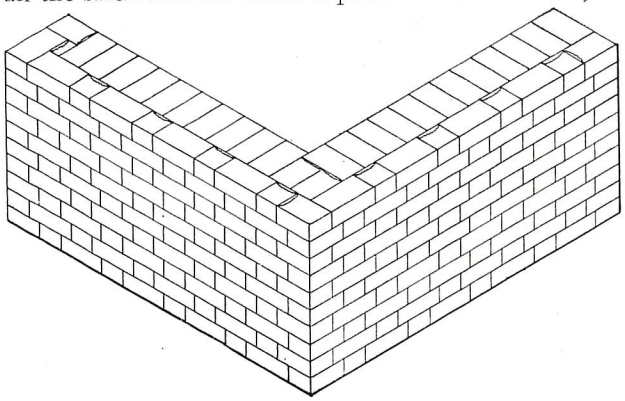


Fig. 7. Flemish Bond.

they stretch or run along in a continuous line or course. No attempt is made to incorporate any pattern or design into the face of the wall yet it is utilitarian in purpose.

Next in order is the American or Common bond which consists of a combination of heading and stretching courses so arranged that a series of five (5), seven (7), or nine (9) stretching courses will appear between

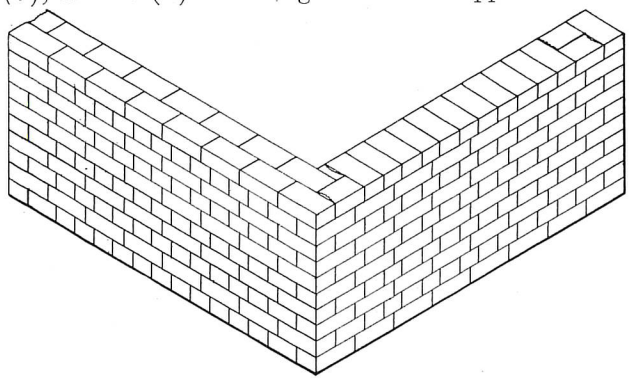


Fig. 8. English Bond.

heading courses. The heading courses may be constructed either of full headers or flemish headers as shown in Fig. 5. The Flemish headers form the strongest bond.

Flemish bond consists of headers and stretchers laid alternately in each and every course. The Flemish bond is used extensively where Colonial brickwork is desired, and is best produced by the use of the "red stretcher and black header." There are several ways of obtaining this bond, especially in the arrangement of the brick at corners and angles. This is not only true of this bond, but also of all the bonds used in brick masonry. (See Figures 6 and 7.)

English bond consists of heading and stretching courses laid alternately. This bond is picturesque and

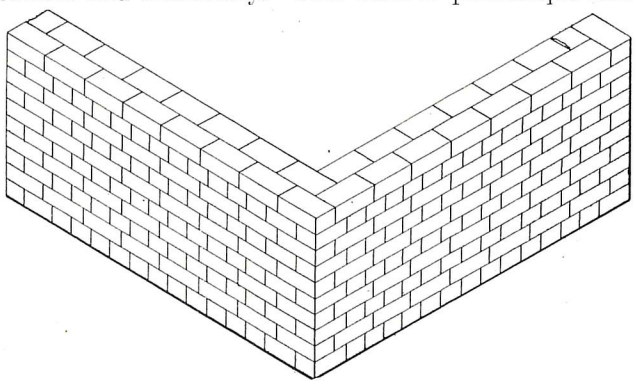


Fig. 9. English Bond.

strong, and is particularly appropriate for the English style of architecture now in vogue in this country. The greater part of England's best brickwork is constructed of this bond, and whenever or wherever used it adds feeling and interest to the wall. For illustrations see Figures 8 and 9.

Another bond used quite extensively in this country as well as in European countries is the Dutch, or what is sometimes incorrectly called the English-cross bond. It was first originated in Holland and Belgium in the

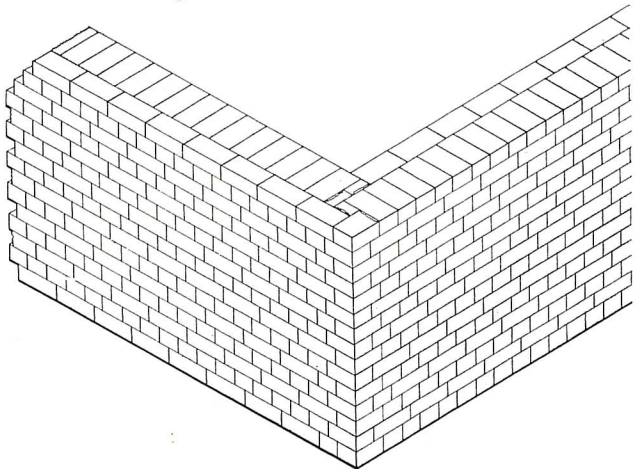
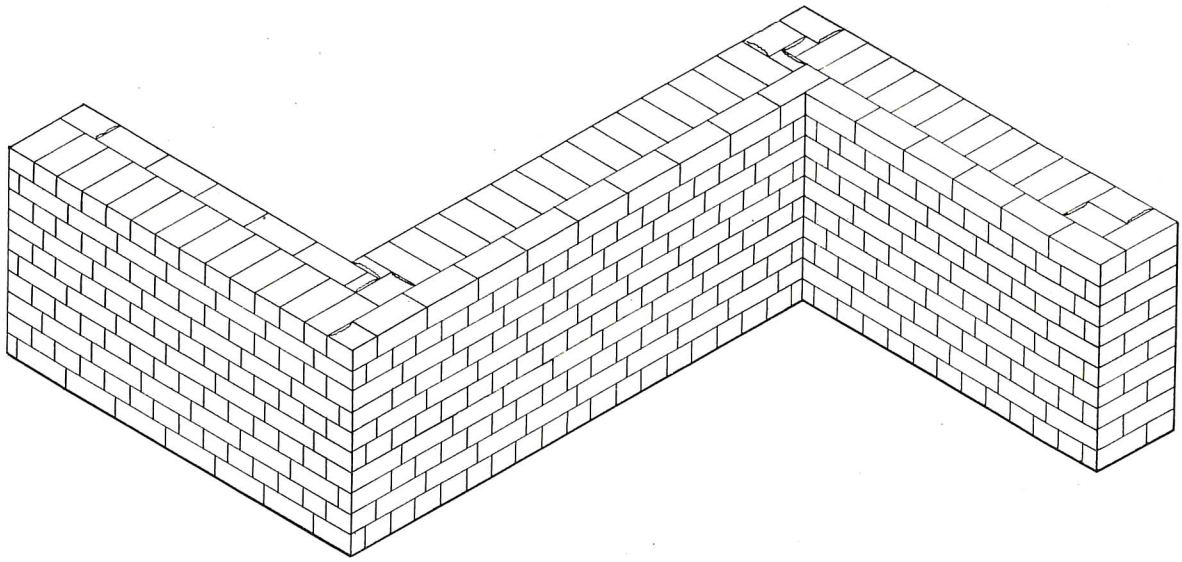


Fig. 10. Dutch or English-Cross Bond.

sixteenth century and was also used in former times in England. Because of its close resemblance to the English bond, it gets the name of the English-cross bond.

This bond consists of heading and stretching courses laid alternately, and the bricks so arranged that the headers in the heading courses are vertical to one another, while the stretching courses should break bond, the same as in Running bond, should the heading courses be removed. This is a very strong bond and gives a pleasing facial expression. Figures 10, 11, 12 and 13, illustrate the four different manners in which this bond is obtained at both corners and angles.



Figs. 11, 12, 13. Dutch or English-Cross Bond.

Figures 14 and 15 show two methods of constructing what is known to the trade as Garden bond. This bond derives its name from the fact that this type of facial expression was used chiefly by the English in constructing the walls which surrounded the gardens of the old English homes and estates. In this bond both the exterior and interior faces of the wall should show alike and all headers should be full brick in order to make as strong a wall as possible, since garden walls are exposed to the action of the atmosphere on all sides. The usual type of facial expression for this bond is of the Flemish

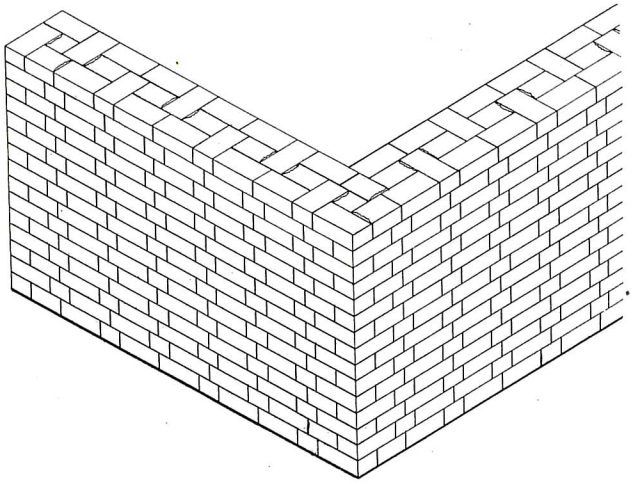


Fig. 14. Garden Bond.

nature only instead of using a single stretcher between headers, as in the real Flemish bond, two or three consecutive stretchers will appear between headers. When the headers are of a different color than that of the stretchers, as for instance in the black header-red stretcher type of construction the seemingly vertical lines of heads seem to add height to the wall.

Another very interesting and unique bond is the Flemish-Cross bond, illustrated in Figure 16. This bond consists of a combination of stretching courses and Flemish-heading courses, arranged with odd numbered courses being Flemish headers and even numbered courses consisting of all stretchers crossed in every

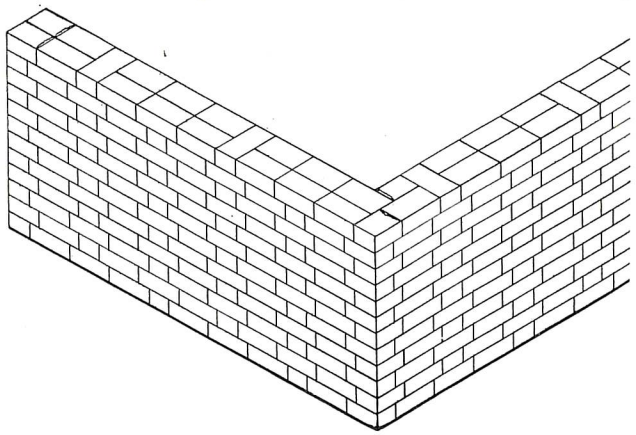


Fig. 15. Garden Bond.

course. The headers in the Flemish heading courses are shifted their own width back and forth in alternating courses from a vertical line.

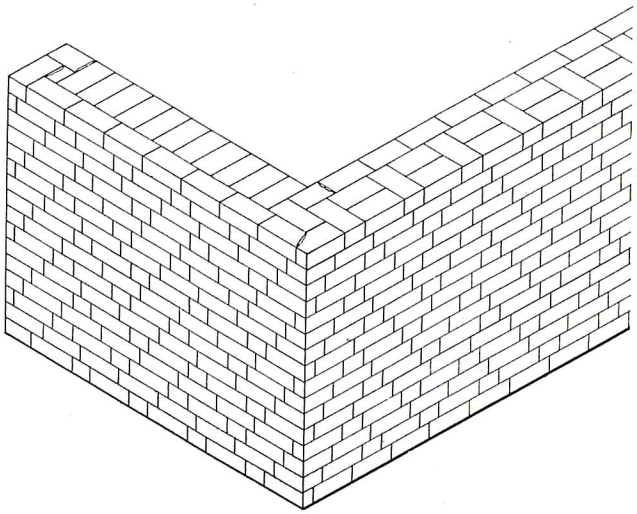


Fig. 16. Flemish Cross Bond.

COSTUME DESIGN AND ILLUSTRATION

Ethel H. Traphagen

(Seventh Article)

CRAYON PENCIL.

CRAYON Pencil is a fascinating medium. It is used in preference to pencil for reproduction because it has not the shiny quality of the usual lead which prevents that from photographing well and therefore from being good for reproduction. Chalk, crayon and pencil however are handled, and by them great beauty and much feeling can be expressed. See illustrations numbers 20a and 22a.

Illustration 20. Permission, Gerhard Mennen Co.

Nevertheless chalk does not lend itself so readily to detail, famous as it is for its more illuminative or sketchy quality.

Wolf Crayon Pencils are very good. B and 3-B Wolf Crayon pencils and kid bristol board are good materials. Kneaded rubber and Dixon or Eberhard Faber green or red rubber are useful, also an emery board pad to keep the pencil points sharp.

It is best to sketch the drawing in first with the B pencil and then put the darkest darks in with the 3-B and the more delicate finishing touches with the sharply pointed B. Sometimes Stumps are used to rub the shadows in, giving the drawing less line texture; sometimes wash is combined effectively with the crayon; then again the crayon drawing is carried out almost entirely in line. See illustration Number 57.

Color.

The most convenient and general theory about color is that based on the three primaries, red, yellow and blue. As these colors cannot be produced by the mixture or combination of any other color they are said to be pure or simple colors, i. e. primaries.

The secondary colors are orange, green and purple. These are made by mixing two of the primary colors together. This mixture forms the complement of the remaining primary.

Red and Blue makes Purple, the complement of Yellow.

Blue and Yellow makes Green, the complement of Red.

Yellow and Red makes Orange, the complement of Blue.

Complementary colors show strong contrast and enrich each other.

The coldest color is blue and the warmest color is its complement, orange, which is the farthest away from blue in the color wheel. (See Prang's Art Education—High School Chart B. 251.)

Tertiary colors are those formed by the mixture of the secondary colors; as, orange mixed with green makes the tertiary, citrine.

The more a color is greyed the more neutral it becomes.

By Normal color is meant the foundation color of a scale of tones, the tones getting darker or lighter from this foundation.

Illustration 22a. Permission, John Wanamaker.

By tone is meant the modification of any normal color by the addition of black or white.

By Tint is meant the light tone of any color.

Illustration 57. Permission, The Ladies' Home Journal.

By Shade is meant the dark tone of any color.

By Scale of color is meant the gradation of a series of tones of the same color from the lightest shade thru the normal or pure color to the darkest shade.

By Hue is meant the departure from the original scale of a certain color, to a greater or less degree, by the addition of a comparatively small proportion of another color.

By Value is meant the amount of dark or light expressed by a color.

Of Harmonies there are four important kinds:

1. Monochromatic, i. e. a group of different tones, values or intensities of one color.

2. Complementary, i. e. two complementary colors used together with some unifying element, by the mixing of the one with the other, or by mixing a little gray with both.

3. Analagous, i. e. made by colors that are next to each in the color circle, and are harmonious because they have in different quantities a common element.

4. Dominant Harmony, i. e. several colors all influenced or subdued by the same color.

Many are the designer's sources. With the knowledge of what harmony consists in we can go to nature and find an endless variety of color schemes in the animals, minerals, birds, reptiles and flowers, and in atmospheric effects. Or we can go to museums and study china and glass and textiles, such as tapestries, rugs and old embroideries and laces. Again, we can go to picture galleries and get inspiration from old and new Japanese prints and from old and new masters in art. See Whistler's Nocturne, Battersea Bridge, and Gown Adaptation. Illustration Number 60.

Illustration 60. Permission, The New York Times.

Illustration 57. Permission, The Ladies' Home Journal.

In deciding what colors are most becoming, remember that a color not only reflects its own tint on the face

of the wearer but also its complement. (This is called simultaneous contrast.) Therefore the eyes, hair and skin must be considered and such a color for the dress chosen as will neither give the person a faded, sickish tinge nor too harsh and florid an appearance but will enhance his or her particular beauty.

A very ugly combination can be made by putting together two different hues of the same color. Simultaneous contrast takes place with a disastrous result. This is often what we mean when we say one blue kills another or one red kills another red. On account of this matter of hue, things that are the same color but of a different hue do not always harmonize.

Be careful about using colors of the same intensity together. It is usually more satisfactory to use the more brilliant color in the smaller quantity.

In painting begin at the top and color downward from your left to your right. The edge of a color may be softened by a clean damp brush. This is necessary in doing velvets. Where shiny taffeta is desired let paints dry in harder line to give crispness, and do not work over while still wet.

Cold colors serve as shadows to warmer colors and should be laid on first, and generally warm colors over cold should be the rule. After the sketch is finished and dry the unfinished looking darks can be picked up with some darker darks and the high lights on edge of coats, pockets, tucks, etc., can be brought out by thin, steady, crisp, Chinese-white lines.

Prussian Blue, Lake and Sepia mixed make gray.

One way of graying a color is by adding a little of its complement but Payne's Gray, Brown and Black are often of value for this use in dressmakers sketches and commercial drawings.

The brushes must be kept clean and rinsed after use. Never leave them in the water. Take plenty of color in your brush. Try first on a piece of spare paper to see that you have the right shade and that the brush is not too wet or too dry.

When you intend covering a space with a flat tone have enough color mixed to go from top to bottom and side to side without doing any more mixing or dipping your brush in the water. Have the drawing board tilted toward you and enough color in your brush to ensure its not drying but keep the little rivulet going without the danger of dry spots. For practice work it is well to make some eight inch squares and try covering their surfaces with a uniform tone.

When you are making a dressmaker's sketch in white it is useful to put a little color in the background, up on one side and down on the other, not making it too intense, and taking care to soften the edges.

When wishing to work in opaque (or body color) add some Chinese white to your color. This is often used for reproduction.

Thompson's white has a stiff quality which makes it of value in doing dressmaker's sketches where raised buttons, beads, embroidery, lace, etc., are desired. Put it on rather dry and let it stand until all moisture seems gone before touching up these buttons, beads or lace color, gold or silver.

Ink outline is often used with color both for dressmaker's sketches and for reproduction.

(Have your sketch always carefully made in pencil, putting in the details last. Put in your big washes first and keep the whole sketch going, being particular not to concentrate too much on any one part. Avoid "niggling;" keep your wash clean and bold.)

Orange Vermilion makes good tones; Vermilion, good lips and color in cheeks. There are two ways of putting this color on. One by putting the Orange Vermilion tone over all the flesh and then when dry adding the desired color to the cheeks (preferably having it high on the cheek bones) and quickly softening the edge. The other way is by stippling or putting on with the tiny point of the brush the added color while the all over flesh tone is still wet.

Always remember that colors dry much lighter. Blue and bluish Gray make good shadows for white.

In doing a dressmaker's sketch in dark blue or black always keep the color transparent and lighter than the real material tho having the same effect so that the detail will be shown.

DON'T think too much of style, but set yourself to get out of you what you think beautiful, and express it, as cautiously as you please, but, I repeat, quite distinctly and without vagueness.

—*William Morris.*

CLAY OUTLINE ENRICHMENT IN THE ROOKWOOD POTTERIES.

INDUSTRIAL ARTS DESIGN

William H. Varnum, University of Wisconsin

(Sixth Article)

ENRICHMENT OF THE CONTOURS OR OUTLINES OF CLAY.

IN the medium we are now about to consider, there is a tendency for the enthusiastic beginner to over-elaborate the outline into meaningless forms. This possibly is due to the ease with which clay is manipulated. It would be well then to ask two questions before starting with the work of enriching the simple structure: First why should it be enriched—is there a positive gain by so doing and; second (if the decision is favorable to enrichment), where should it be enriched?

Parts Differing in function. Rule 5d. Parts of one design differing in function should differ in appearance but be co-ordinated with the entire design. As a suggestion to guide one in enriching an object it is necessary to consider that parts differing in function may differ in appearance, but as members of one family they should still be related to the whole. For example, a spout, handle and lid may differ in design from the body of a pitcher as they differ in function. Again, the rim and foot of a vase may be slightly changed or individually accented because of their respective duties. The base and holder of a candle-stick may vary from central part or handle as each has a special function to perform. This rule of the change of appearance with the change of functional service (Rule 5d), is found thruout architectural design. The base, shaft and capital of a column is possibly one of the most common examples. While differing in function they still *must have unity and "hold together."*

These functional parts of one design differing in service rendered, form centers of construction and may receive emphasis in outline enrichment. Corners and terminal points are likewise available for decoration and will be discussed at length later.

Value of Curves in Outline Enrichment. Enrichment in clay and metal generally means a substitution of curved for straight lines in the enriched portions of the design. These curves have the ability to impart grace, lightness and variety to an object provided they are based upon constructive features of the problem. These curves must have a unit of measurement and must likewise be appropriate to the material. It is therefore necessary to deal with clay in this article to be followed by another contribution on metal.

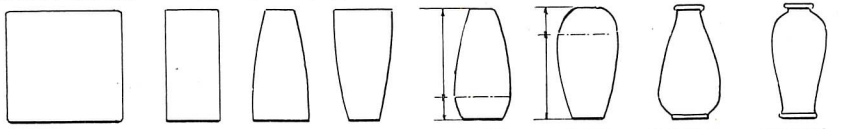
Enrichment of the Clay Outline.

In Figures 109 to 123 we have a number of examples of variation of practically the same primary enclosing rectangle. Figure 108 represents a "squarely" proportioned circular bowl lacking both refinement of proportion and enrichment. Figure 109 has added refinement of proportions. Figures 110 and 111 have introduced an outline enriched to the extent of a simple curve. The base is the dominant width in the first, and the top dominates in width in the second. The outline in Figure 112 while similar to 110 for a portion of its length departs at a stated point and by curving in towards the base supplies more variety to the contour. We have already said that this outline curve should have a unit of measurement and by referring to Rules 2a and 2b we are able to formulate the following:

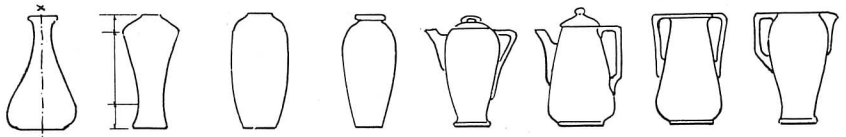
Unit of Measurement for Curves in Outline Enrichment. Rule 5e. Outline curves with a vertical tendency should have their turning points or units of measurement in accordance with the horizontal divisions of Rules 2a and 2b. Figures 112 and 113 have as their unit of measurement two horizontal spaces formed in accordance with Rule 2a while Figures 116 and 117 have still more variety by the addition of a compound curve with its turning points or unit of measurement based upon Rule

· OUTLINE ENRICHMENT OF THE PRIMARY MASS IN CLAY ·

GOOD CONSTRUCTIVE DESIGN IS " A FREE AND ADEQUATE EMBODIMENT OF AN IDEA IN A FORM PECULIARLY APPROPRIATE TO THE IDEA ITSELF " HEGEL

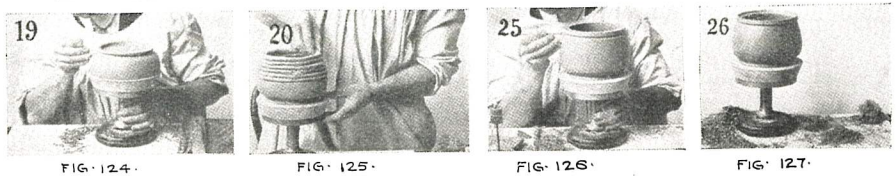


FIG·108· FIG·109· FIG·110· FIG·111 FIG·112· FIG·113· FIG·114 FIG·115



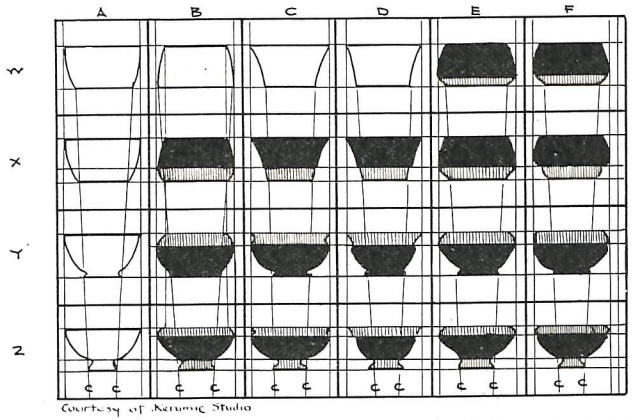
FIG·116· FIG·117· FIG·118· FIG·119· FIG·120 FIG·121· FIG·122 FIG·123·

A SIMPLE DEVICE FOR POTTERY DESIGNING CONSISTS OF A SHEET OF PAPER FOLDED ON LINE XX FIG·116·· BY CUTTING THE OUTLINE OF ONE SIDE, THE OPPOSITE SIDE IS LIKEWISE FORMED: A TIN TEMPLATE MAY BE FORMED FROM THE PAPER PATTERN AND USED TO TEST THE CONSTRUCTION



FIG·124· FIG·125· FIG·126· FIG·127·

-CONSTRUCTIVE EVOLUTION OF OUTLINE ENRICHMENT: ACCENTUATION OF THE RIM AND FOOT·



Courtesy of Keramic Studio

← FIG·128·
A·B·C·D· NO HORL DIVISIONS
E·F· LOW " DIVISIONS

← FIG·129·
TWO HORIZONTAL SPACE DIVISIONS WITH UPPER SPACE DOMINANT

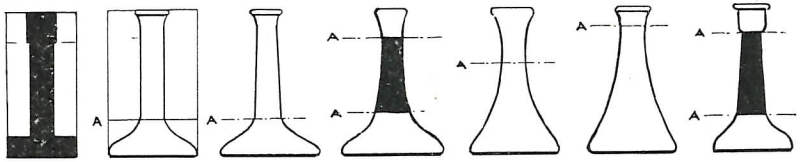
← FIG·130·
TWO HORIZONTAL SPACE DIVISIONS WITH LOWER SPACE DOMINANT

← FIG·131·
THREE HORIZONTAL SPACE DIVISIONS WITH CENTRE SPACE DOMINANT

ENRICHMENT OF THE SIMPLE FORMS ON LINE "W" BY COMBINING TWO PROCESSES:
1·VARYING THE POSITION AND NUMBER OF THE HORIZONTAL DIVISIONS (RULES 2A AND B) AND
2·BY SYSTEMATICALLY VARYING THE BASE OR FOOT WIDTHS FROM "W" TO "Z" BY MEANS OF THE CONVERGING LINES "C"· THE WIDTH AND HEIGHT OF THE PRIMARY MASS IS CONSTANT·

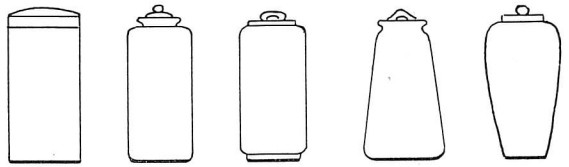
Plate 22.

OUTLINE ENRICHMENT OF THE PRIMARY MASS IN CLAY WITH METHODS OF SECURING VARIETY



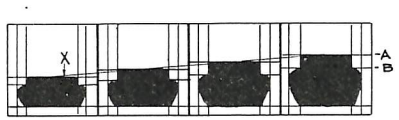
FIG·132· FIG·133· FIG·134· FIG·135· FIG·136· FIG·137· FIG·138·

UNENRICHED CANDLESTICK (FIG·) WITH SIX POSSIBLE VARIATIONS OF CURVED OUTLINE ENRICHMENT

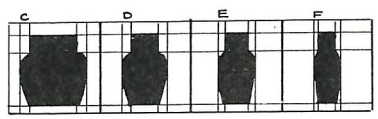


FOUR VARIATIONS OF CONTAINER WITH SLIGHT CHANGE OF PROPORTIONS
FIG· 139·

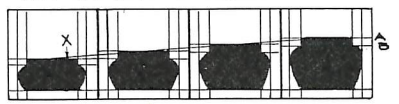
VARIATIONS OF POURER WITH APPENDAGIES
FIG· 140·



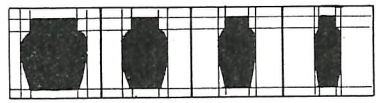
FORMS WITH THE SAME WIDTHS BUT VARYING IN HEIGHT



FORMS WITH THE SAME HEIGHT BUT VARYING IN WIDTH



FIG·141· ·HORIZONTAL P·M·



FIG· 142 ·VERTICAL P·M·

FIGURES 141 AND 142 ILLUSTRATE A METHOD OF SYSTEMATICALLY DESIGNING A SERIES OF FORMS SIMILAR IN OUTLINE BUT VARYING IN THE PROPORTIONS OF THE PRIMARY MASSES· SELECTION OF THE MOST PLEASING DESIGN SHOULD BE FOLLOWED BY A FULL SIZE WORKING DRAWING·

Plate 23.

2b. Figures 114 and 115 with outlines similar to 112 and 113 respectively have a new additional point of enrichment, the foot and rim accentuation.

Accentuation of Functional Parts in Clay. The new element of enrichment consists of accenting by adding to the design of modeled rim and base or foot as it is technically known. This not only strengthens the structure at these two functional points but, by adding a small section of shadow it tends to break up the surface (Figure 127), and add to the variety of enrichment. Figures 124 to 127 show the building processes connected with this interesting and constructive addition.

Figures 116 to 119 are variations of the preceding figures while 120 to 123 introduce the appendages to the earlier figures. As in the designing of all appendages, discussed in Article 4, it is the designer's intention to balance spout and handle to avoid a one-sided or top-heavy aspect.

One of the principal difficulties that confronts the amateur designer is the failure to secure variety while retaining balance. The reason is largely due to a lack of ideas upon the subject and a marked lack of systematic development of one theme.

Systematic Development of Outline Enrichment in Clay. Attention is directed to the diagram in the lower portion of Plate 22. The idea is to start with some simple form in Columns A, B, C, D, E, F, Figure 128. Figure 129 introduces *two* horizontal divisions similar to Rule 2a. The *black* portion is the dominant section. Notice the change in outlines based upon this division. Figure 130 raises the division point of the two subdivisions into the upper half of the object. This brings out the need of an accented foot which is, however, not of sufficient prominence to be considered as a horizontal spacing. Figure 131 raises the horizontal division points again causing the introduction of a larger foot and now qualifying it as a division of the whole mass. This then, makes our design a three division problem (2b), and places it under the restrictions of Rule 5e.

The feet of all of the bowls have been systematically decreased in width by the converging lines "C-C" while the tops have been maintained constant in width. By this simple diagram an infinite number of designs may be formed and the choice of selection from the series, thoughtfully exercised, will supply the ideal bowl, ready to be translated into a full size working drawing. It is not the idea, however, to guarantee a perfect design in each one of these divisions as that would be practically impossible, but we have systematically applied a method of determination. A series of articles by F. H. Rhead in the Keramic Studio first suggested the system of development by means of graded rectangles.

Plate 23 shows a further elaboration of the succeeding themes. The candle-stick series, Figures 132 to 138, introduces two or three-space division problems with contour turning points at "A" (Rule 5e), and with accented or embryonic feet and rims. The change from the purely functional and unenriched member of Figure 132 thru the series shows the enrichment changing slightly to meet the needs of the three functional parts, the base, the handle and the candle socket (Rule 5d).

Figure 139 shows a series of illustrations representing variations of containers. The first figure is without enrichment, followed by variations of the outline in the manner already suggested.

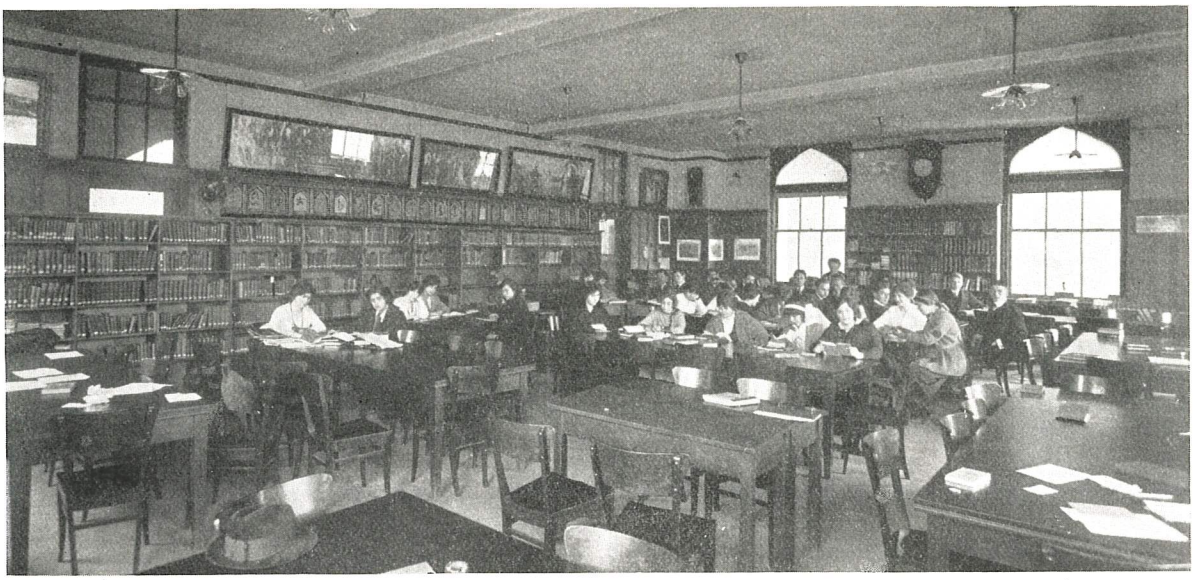
Figure 140 indicates a series of pourers with the least attractive design on the left end. The cause is found, upon analysis, to be a centrally placed horizontal division violating Rule 2a. The design of the appendages in this series will again be found to conform with the rules in Article 4. The units of measurement for the curves may be readily ascertained from observation.

Figure 141 is useful for the following purpose. It is desirable at times to develop a number of similar forms for a set, with a gradually increasing ratio of proportions, either in height or width. Figure 141 shows how the *height* may be increased while maintaining a common width. Notice the gradual proportionate increase of the height of the neck "A-B" as well as the body. The line X is of the utmost value in ascertaining the heighth of the intermediate bowls. The eye should now be so trained that the height of the neck "A-B" on the last bowl can be readily proportioned by eye measurement to that of the first bowl. A line similar to X will give the intermediate points.

Figure 142 varies the *width* in a similar manner. Notice the gradually decreasing distances C-D-E-F which may be again left to the eye for judgment in spacing.

Article 7 will consider the outline enrichment of base and precious metals.

POTTERY MADE BY COLLEGE STUDENTS.



PRINTERS' MARKS AS MURAL DECORATIONS IN A HIGH SCHOOL LIBRARY

Irene Warren, Librarian School of Education, University of Chicago

THE library and the study room of the high school at the University of Chicago have been combined because we find it difficult to conceive of a study room without books. The "source method" has so revolutionized teaching that at least one important line of every vital subject in the curriculum leads to the library. We have tried to see how much the library can contribute to the best interests of the school as a whole and how much it can aid the development of individual departments. Furthermore, we have been interested in seeing how much the various departments can contribute to the efficiency of the library. However, my task is not to narrate the aims and activities of a modern high school library but rather to describe a successful response we received when we asked the art department in this high school to help us make the library more attractive.

Attractiveness is a vital thing in a library for young people. We wish to keep this room so pleasant that the students will want to stay in it. The soft brown of the walls is conducive to study and quiet. The chairs are comfortable, the furniture is plain but adapted to our simple needs. The distribution of the wall shelving was carefully planned and the different colored bindings of the books kept in orderly arrangement on the shelves really add to the decorative effect. Most of the decorations on the walls are large sepia reproductions of such suitable pictures as the mural paintings in the Boston Public Library.

The high school library was an after-thought in this building. It took considerable planning to transform the large classroom with blackboards and bare floors into a library. We wanted the books to have a background suited to them. As librarians we are always watchful for opportunities to emphasize to our young people, the dignity and beauties of the arts and crafts involved in book-making.

When the shelving was constructed at the correct height, against one of the walls, it left a bit of Gothic structure above. We asked the head of the Art Department to change this ugly space for us and he did so with a very pleasing series of color decorations, using the printers' marks as shown in these two illustrations.

The work was done in one of the advanced art classes. Each of the series of decorations was made in two parts; the upper part containing the printer's device painted on art board cut to fit the space while the lower one was made of wood carefully grained. On this lower part are two lines of ornamental lettering; the upper one gives the printer's name and the lower one the city where his press was located and the dates when the press flourished. Each painted board is seven inches across the base and nine and a quarter inches to the tip of the arch. Thirteen have gold backgrounds, and alternating with these are six with red backgrounds, five with blue, and one with green. The devices stand out in clear relief. The ornamental lettering is done in gold. The bright coloring gives a remarkably cheerful air to the room. The following data is placed on a bulletin rear the decoration:

List and Explanations.

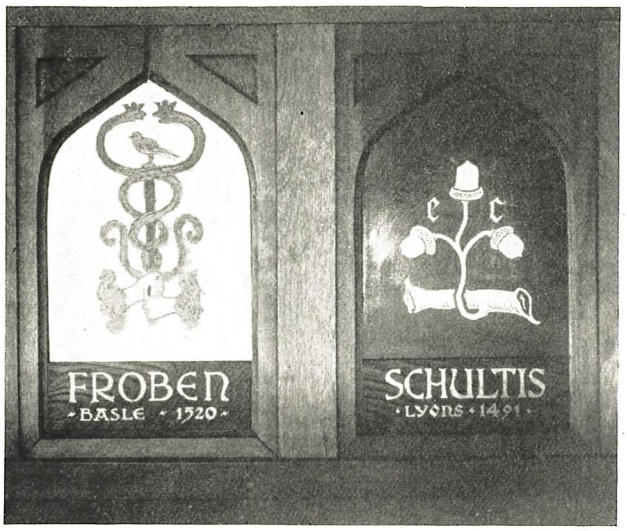
Of the Printers' Marks as shown above the bookcase. (From left to right.)

	Description.	Printer.	City.	Date.
1.	Tree and an old man.	Elzevir	Leyden,	1620-1712.
2.	Crown	Stagninus	Venice,	1483-1505.
3.	Monogram in a heart.	Vivian	Orleans,	1490-——.
4.	W. C.-74	Caxton	London,	1474-1491.
5.	Twined lines	Caesaris	Ghent,	1480-83.
6.	Monogram, R. H.	Rosembach	Barcelona,	1493-98.
7.	Rose	Dallier	Paris,	1545-74.
8.	Monogram	Caci	Saragossa,	1506-43.
9.	Turtle	Cyaneus	Paris,	1529-46.
10.	Shield and snakes.	DeTournes	Lyon,	1542.
11.	Crab and moth.	Frellon	Paris,	1508-——.

Description.	Printer.	City.	Date.
12. Anchor	Aldus	Venice,	1494-1512.
13. Dolphin	Ser Piero Pocini da Pescia	Florence,	1496-1514.
14. Hand and compass.	Plantin	Antwerp,	1557-——.
15. Cross "N. F."	Francfordia	Venice,	1473-1500.
16 Two shields	Fust and Schoeffer.	Mainz,	1457-67.
17. Hands holding staff and twined snakes.	Froben	Basle,	1520.
18. Three acorns	Shulte	Lyons,	1491.
19. Tower "T"	Torresano	Venice,	1480-1508.
20. Griffin rampant	Hieronymus Francisci de Cartulariis	Perugia,	1519-43.
21. Branch with pear.	Benedictus	Bologna,	1513-——.
22. Ship	Du Pre	Paris,	1520-——.
23. Fleur de lis "F.A."	Giunta	Venice,	1489-1501.
24. Tun and tree	Grafton	London,	1537-72.

So little has been written on Printers' Marks it may not be amiss to add a word regarding them. W. Roberts has a very readable book entitled, Printers' Marks: A Chapter in the History of Typography, published by George Bell and Sons in 1893. In the preface he says, "This subject is in many respects one of the most interesting in connection with the early printers, who, using devices at first purely as trade-marks for the protection of their books against the pirate, soon began to discern their ornamental value and, consequently, employed the best available artists to design them. Many of these examples are of the greatest bibliographical and general interest, as well as of considerable value in supplementing an important class of illustrations to the printed books, and showing the origin of several typical classes of book-plates (Ex-Libris)." Perhaps the best known of the printers' marks is the dolphin and anchor of the Aldine Press. Among the publishers of today the most familiar marks come from the presses of D. Appleton and Co., Harper Bros., J. B. Lippincott, and Theodore L. DeVinne and Company.

We feel that this has been a very successful piece of co-operative work. I know of no other high school library where the students have done mural decorations of this sort. So many visitors have asked about this work that I thought an article describing it might be of some practical service to others interested in school libraries.



Two of the Printers' Marks. See 17 and 18 in list.

INDUSTRIAL-ARTS MAGAZINE

EDITORIAL

THAT HIGH SCHOOL THESIS.

THIS is the season when the chrysalis takes wings and soars to heights unknown. So the senior gives expression to his stored wisdom. In times past he too soared to heights unknown, and attempted to settle matters of state and nation on Commencement day. It is an excellent sign of the times that the modern school thesis does not represent so much of flight but more of investigation; not so much of philosophy but more of fact; not so much of precept but more of practice. The fault and remedy have been with the teacher rather than with the pupil. One may hear the modern teacher say to his senior class: "Now young men and young women what have you been studying in school that you would like to go a litttle farther with than has been possible in class? What kind of work have you been doing in school that you can apply to local conditions and on which you can report?" THE INDUSTRIAL-ARTS MAGAZINE will be glad to publish a synopsis of theses that represent the careful study of any industrial work in any community by the graduates of our American Schools.

Neither the thesis nor the commencement oration should become obsolete because they have been inconsistent. They should be consistent with the purpose and occasion and are valuable only when they are within the abilities of the author.

The ability of the high school graduate is limited but there is little need of even approaching the limit. The editors of THE INDUSTRIAL-ARTS MAGAZINE have been asked to suggest subjects for High School theses in the Industrial Arts.

These suggestions have been directed toward a concise and careful study of some industry or object of need in the community. There is probably no community that does not offer such subjects of study and we surmise that the high school senior might even add a little by suggestion, to the best practice of industrial art in his community.

SPECIFIC DESIGN.

THE BOARD OF TRADE OF LONDON has placed an exhibition of German and Austrian manufactures in Goldsmith's Hall which represents successful design as applied in manufacture.

It is readily conceived that no lack of material was available for the purpose in England.

The average American retail shop would supply an exhibit of like significance. "Made in Germany" is stamped on useful commodities the world over because Germany has spared no pains to adapt her manufactured product to the tastes as well as to the needs of the nations of the world.

The London Board have done well to emphasize this matter to the English people at this time. Whatever nations may be victorious in war it may be assured that one ultimate result of the war will be keener competition in the design of manufactured products. This design will not be of aesthetical standard alone, or of utilitarian standard alone, but it will be the *best design for the specific market to which it is directed.*

School design no less than shop design may well be directed to a specific application. School products of the industrial arts should be as beautiful as possible, and as useful as possible, but like the products of manufacture they should be designed for a *specific use* to be either educationally or commercially successful.

It is said that there are between sixty and seventy thousand German lithographs on the walls of London schoolrooms. They are largely English scenes which German artists have sketched in England and which have been reproduced by German lithographers and sold by Germany to the London school authorities.

The German experts have scouted the world for marketable ideas and have transformed the raw material of the nations into manufactured articles that just suit the taste and needs of the people.

Commercial success depends upon having the right article at the right time, place and price.

The Deutsche Werkbund is an organization of thousands of designers, manufacturers and distributors working together to the one common end of supplying the needs of the world's markets.

The English people are learning a lesson in specific design by the intimate association of war. They will probably never return to the use of so much "made in Germany" manufactures.

America is in much the same case with England as regards her manufactures. There is not only a lack of co-operation between designer, manufacturer and distributor but there is a sad lack of specific instruction in design.

SUPERINTENDENTS AND VOCATIONAL EDUCATION.

CONSIDERABLE has been said lately concerning the interest of school superintendents in Vocational Education. As we are living in a period of surveys and statistics, some statistics on this question would be interesting.

We have in this country a National Society for the Promotion of Industrial Education, several large manual training associations that are doing considerable along vocational lines, and a few publications devoted to this work. These publications present the best thought and most modern practice in industrial and vocational education. The associations mentioned have meetings in which some of the papers on Vocational Education read in the department of superintendence would seem quite mediocre, to put it mildly.

As to the statistics: How many superintendents are members of the National Society for the Promotion of Industrial Education? How many are members of either the Eastern or Western Drawing and Manual Training Associations or attend their meetings? How many

superintendents are subscribers to, or even look over, the magazines devoted to industrial and vocational education? These statistics are accessible but their publication would make it quite evident, that a majority of superintendents are interested in the subject only insofar as it affects the permanence or authority of their present positions. There are many live superintendents with large vision who are thoroly alive to the situation, but they are in the minority.

The superintendent should be the educational leader in his community and not merely a political office holder. He should above all be professional, and to be so he must be well informed as to the most advanced thought in his profession. If he wishes to have the administration and control of Vocational Education placed in his hands, he should be competent to handle the situation.

As it is, some of the speeches made by schoolmen on the subject of vocational education and perhaps more especially on Vocational Guidance would be a joke, were it not for the serious consequences which may result from the placing of the interests of the children in such care. The speeches betray a total ignorance of the entire field of industrial education and of the vocational needs of boys and girls.

If an appeal to the selfish personal interest, is the only avenue of approach to some superintendents, we wish to warn them that there is no question before the American people which is fraught with more serious and far-reaching results than the vocational education of the children.

STATE SUBSIDY.

A writer in a recent educational publication defends legislation limiting state aid to vocational education in evening schools which is supplementary to the day employment, thus:

"SOME of the critics of vocational education legislation have recently called attention to what they regard as defects in such legislation, in language that might be appropriate to the heralding of some new discovery. There is a similarity in the laws of several States in emphasizing provision for evening and continuation school classes for the training of persons *in the occupations in which they are employed,* and in minimizing or omitting provision for training persons *now employed in one occupation for efficiency in some other.*

"This evident limitation in scope of legislative provision does not exist because of a conspiracy on the part of sinister 'interests' to cripple the law by the insertion of 'jokers'; it is not due even to lack of foresight on the part of the framers of the law. Not only were those who were primarily responsible for the drafting of the laws conscious of the limitations referred to, but the enactments were purposely so drawn, and attention was publicly invited to the objects in view.

"The difficulties are best illustrated by an example. A boy who is employed as a telegraph messenger, being convinced that the occupation holds no future for him, decides to become a machinist. A little reflection upon the number of thousands of hours required to train a skilled machinist, and the number of years at 4, 6 or 8 hours per week, forces the conclusion that evening or continuation school classes, for this purpose, *for a boy who is not working in a machine-shop,* do not constitute a profitable undertaking, either for the boy or the school. * * * *

* * * "Some day it will be accepted as the business of the school to provide every pupil with sufficient variety of experience to enable him to reach a conclusion as to his own talents and aptitudes. But this is preliminary to the real work of specialized vocational preparation, such as is contemplated in current legislation." * * * *

"It does not seem unreasonable, from the point of view of the State subsidy, that the boy shall secure employment as a beginner, at least, in the occupation for which he seeks further special training in order to demonstrate: (1) that he has personal qualifications and aptitude for the work and (2) that there is a place for him in the occupation.

"Those who have given much study to the problem, and who have experience upon which to base their opinions, insist that proper training for the skilled trades cannot be given in a school in brief installments of a few hours a week. There can be no adequate defense, therefore, for the proposal that the State shall appropriate funds to be expended by a community for a purpose which it is believed cannot be accomplished."

We have as yet no apologies to offer for severely criticising such legislation as is mentioned in this quotation. Furthermore the arguments presented do not give us any reason for altering our opinion of such legislation which may be found in our June, 1914, (page 248) and August, 1914, (page 87) issues.

That the writer has over-estimated the attention which was "publicly invited to the objects in view" is evidenced by the resolutions condemning this feature of the laws which have been passed by various organizations, and the modifications which have been made in the laws under discussion. He furthermore uses the expressions "hours required to train a skilled machinist" and "proper training for the skilled trades" somewhat indiscriminately.

We would like to suggest another example: If a group of persons, e. g. bottle washers, in one of the breweries of Terre Haute, Milwaukee, St. Louis, or Cincinnati; or in one of the distilleries of Peoria, were to attend a state aided evening school where the instruction is so limited, what instruction would be given them?

If the purpose of state aid is correctly defined in the quotation given, the state proposes to subsidize the training of the young persons who are already in profitable vocations and washes its hands of the responsibility of training the person in a so-called blind alley If this is the goal of the propaganda for vocational education, Presidest Wheeler of the University of California may not be entirely wrong in his declaration that "Vocational Training is an effort of aristocracy to hold the sons of the laboring men in a life of toil. It is a trick of the Europeans to sidetrack boys." However we have an entirely different conception of Vocational Education.

THERE is still a halo awaiting the person who will remodel the elementary school curriculum to fit present day needs and conditions.

This test is known as "Series A" which is a simple preliminary test on the engine.

Calculations.

Series Number. "A".
Running test Number, from the log.
Brake Load in pounds, from the log.
Revolutions per minute (R. P. M.), from the log.
Duration of test, from the log.
Calculated Brake Horse-Power. (B. H. P.)
B. H. P. equals W. N. K.
Where W. equals Brake Load in pounds.
Where N. equals R. P. M.
Where K. is a constant in every test.
The constant K. is obtained as follows:

$$\frac{2 \text{ pi r}}{33{,}000}$$ Where r is the rad of the brake arm in feet = 1.5 feet.

K. for the engine in this test is .000285.

1 BHP = 15 x 1072 x .000285 = 4.582
2 BHP = 20 x 1408 x .000285 = 8.025
3 BHP = 30 x 1820 x .000285 = 15.561
4 BHP = 40 x 1960 x .000285 = 22.344

FOUNDRY CRANE.

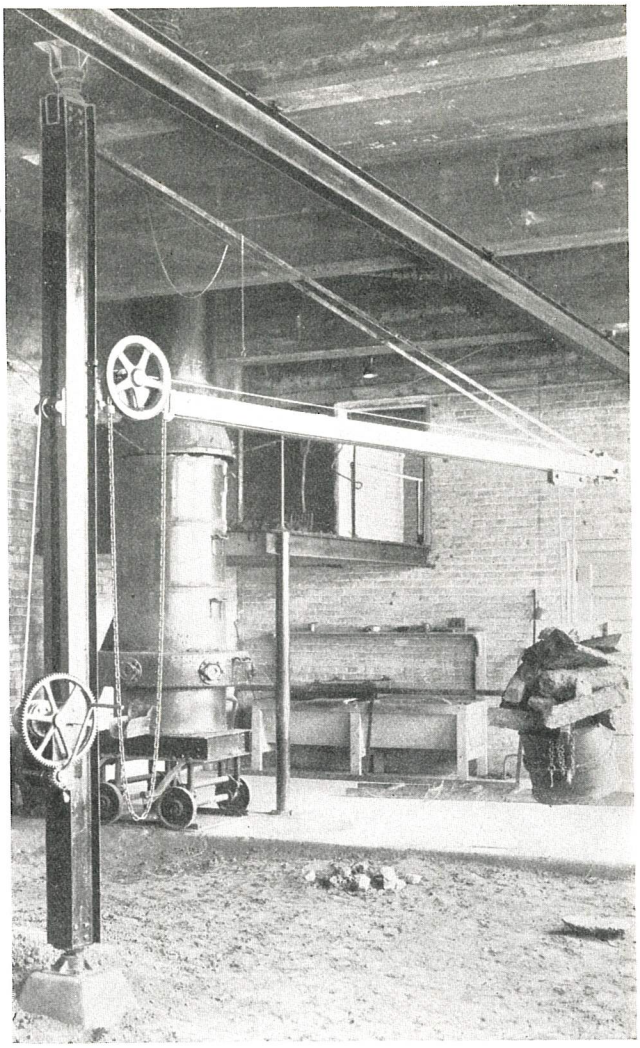
Hans Schmidt, Oshkosh, Wis.

THE CRANE shown was designed by Edmund Harrington, a student in the class in machine design at the 1914 summer session of the department of industrial education at the state normal school, Oshkosh, Wis.

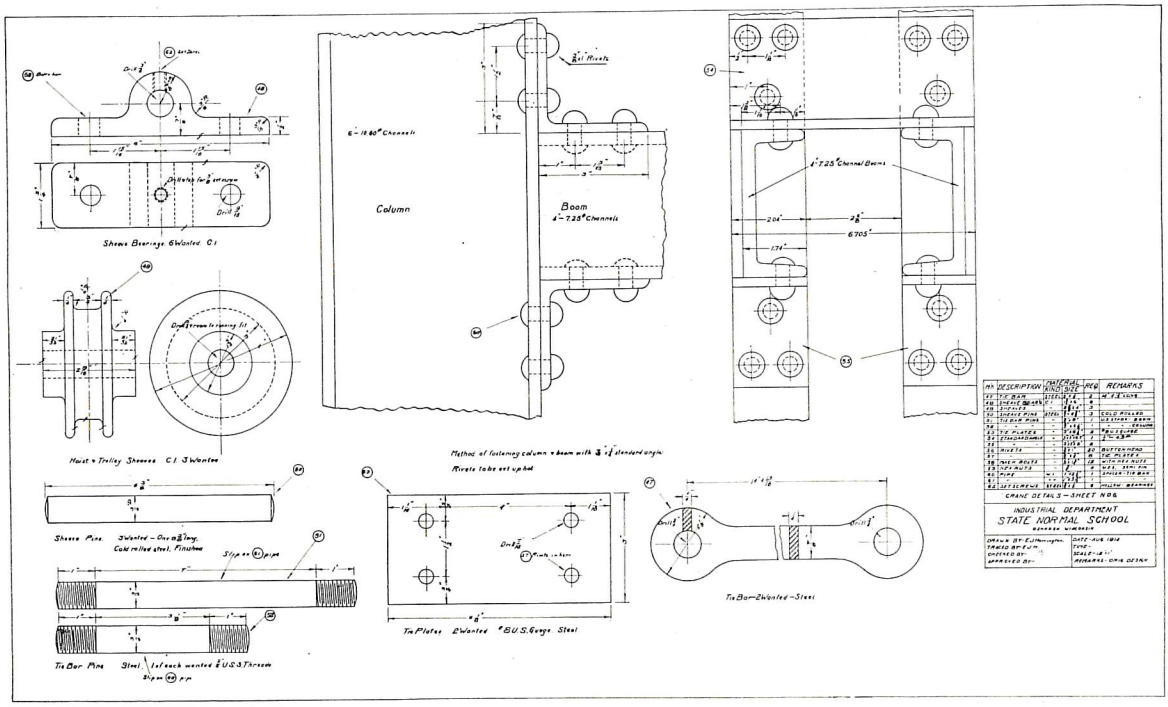
There existed the need for a crane in the foundry, in order to handle the large flasks, tilting ladle, etc., and the problem was assigned to certain members of the machine design class to work out in competition and Mr. Harrington's design was chosen.

The capacity of the crane is 1,000 lbs. at fourteen ft. radius and 3,000 lbs. at six ft. radius. All calculations for stresses and materials were carried out by the students and complete six sheet details were designed. The patternmaking classes made the patterns, the forge classes did the necessary forging and to the machineshop crew was assigned the machine work and assembling. All castings were made in the school foundry.

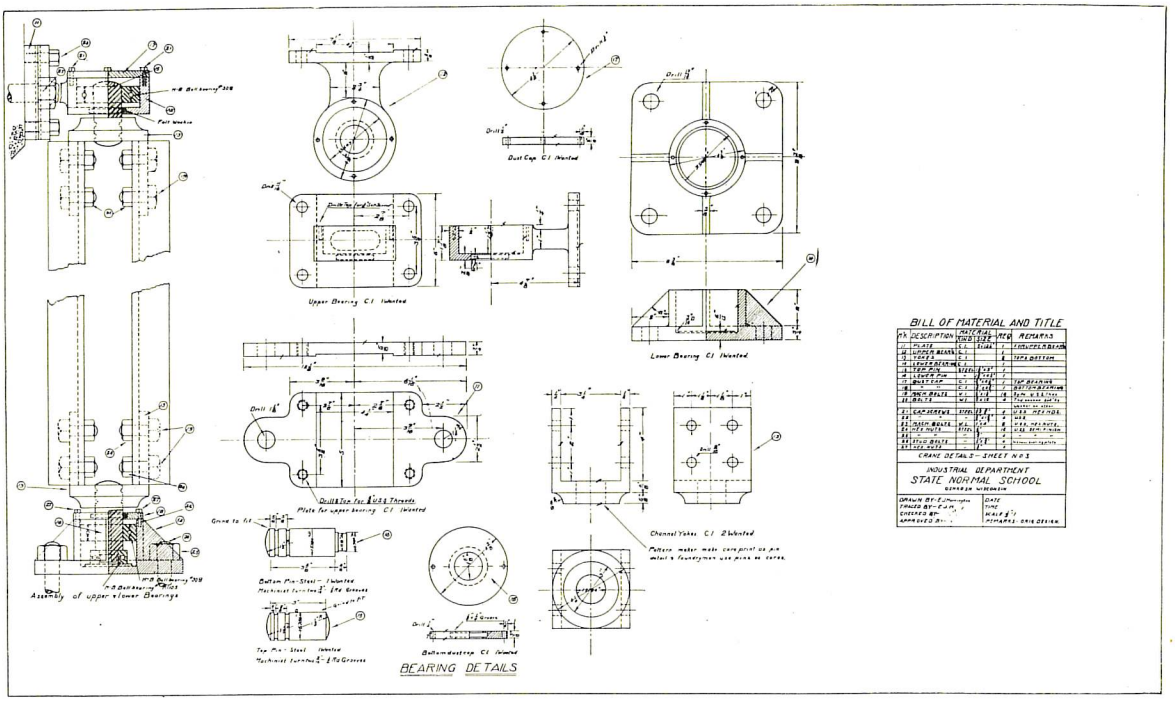
The crane is mounted on ball bearings, a radial one



THE COMPLETED CRANE.



DETAILS OF CRANE DESIGNED AND MADE BY STUDENTS, OSHKOSH STATE NORMAL SCHOOL, OSHKOSH, WIS.



BEARING DETAILS, FOUNDRY CRANE.

at the top and a thrust and radial bearing at the step. The photograph shows the crane under a test load 100% in excess of working load.

The shops are also building a low-swing cut-off saw for the wood shops, a moulding machine for the foundry and other shop projects.

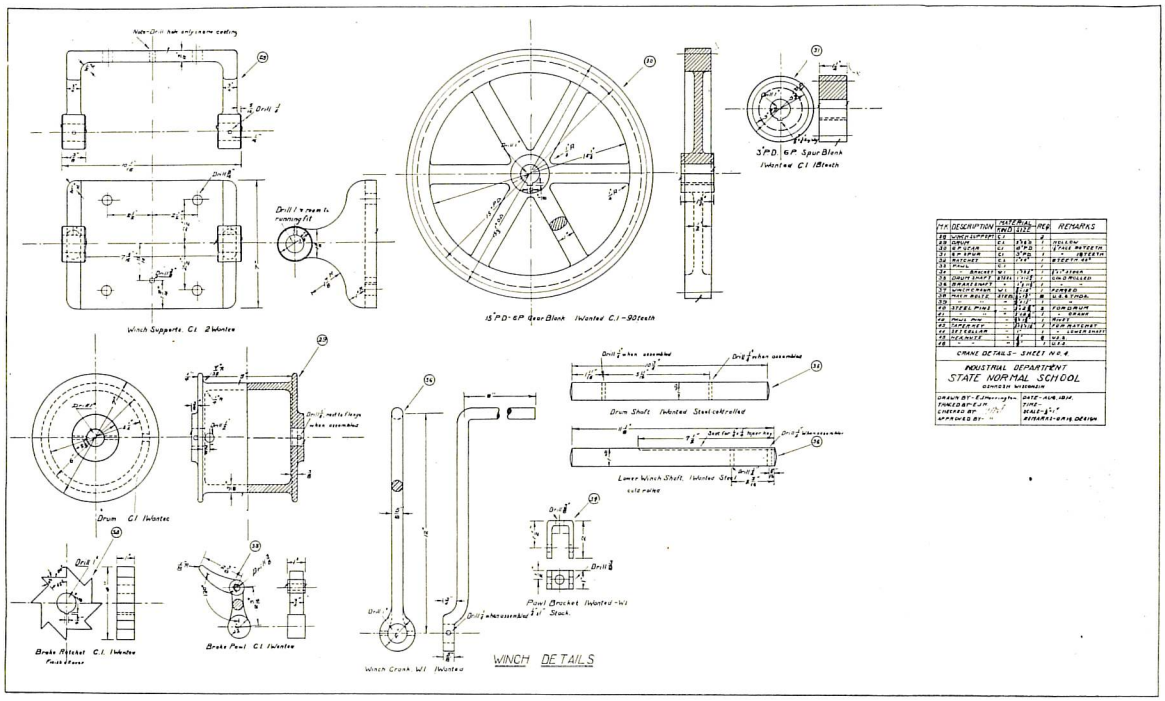
It has been found that this class of projects is being done extremely well by the students; the fact that all work turned out by them has to stand the test of actual use and that the students are actual commercial producers, has resulted in increased interest, efficiency and satisfaction. This attitude on the part of the student more than offsets any so-called "illogical and non-methodical procedure," entailed by these problems; yet the latter is not nearly so much in evidence as might be expected, as the variety of work entailed is sufficient to permit a judicious apportionment of tool processes.

THE MAKING OF A SMALL HAND AXE.

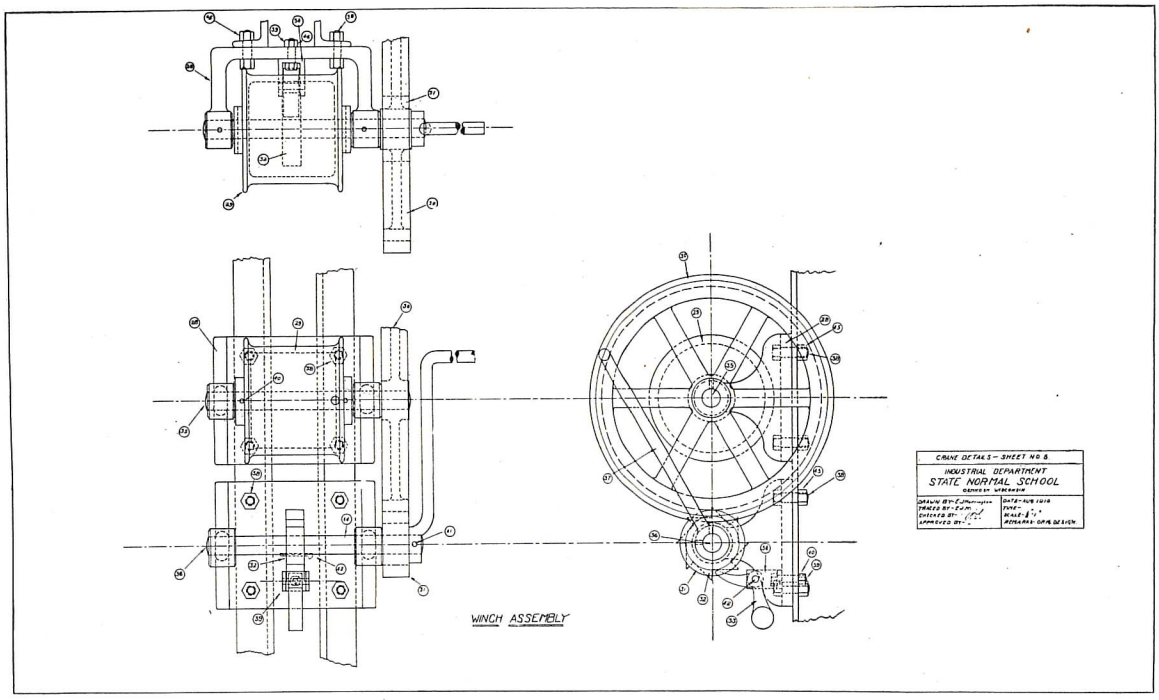
E. A. Berkley, Sheboygan, Wis.

THE axe manufacturer buys the drop forging of the axe blade from a firm making a specialty of manufacturing drop forgings. In the Manual Training and Industrial Schools so much effort is put forth to select such models as can be made entirely by the student, from the raw material to the finished product, that many very interesting and practical models are not included in the shop course.

A small hand axe appeals to nearly every boy; besides



WINCH DETAILS, FOUNDRY CRANE.



DETAILS, FOUNDRY CRANE.

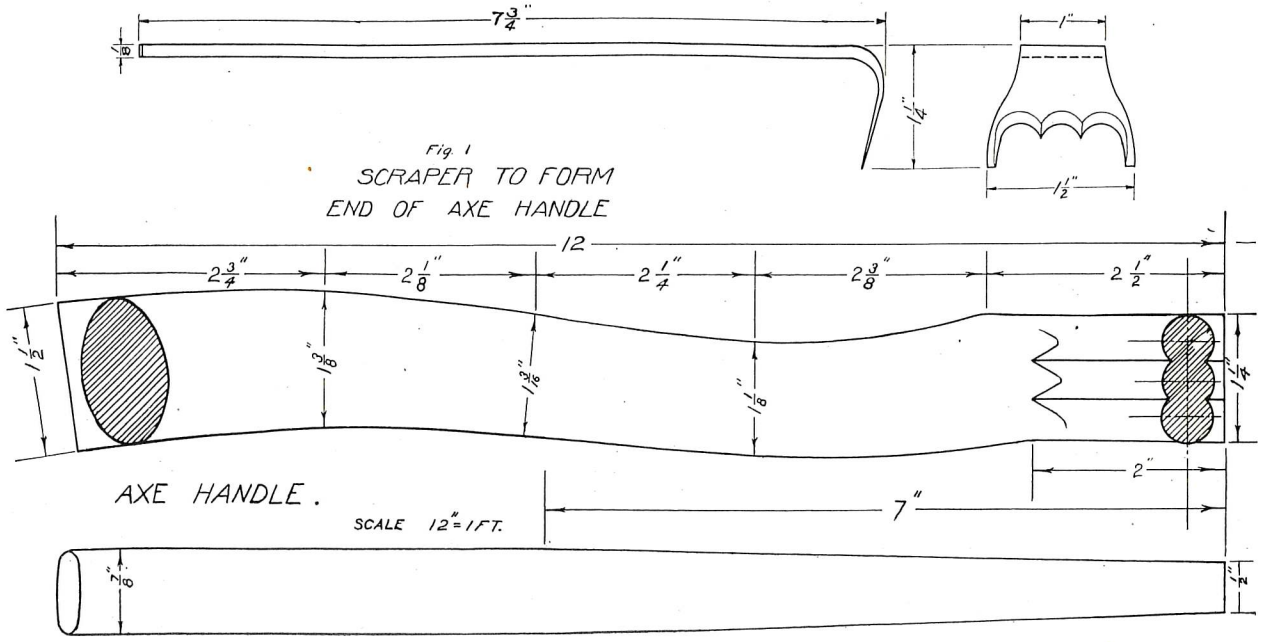
it has a commercial value and is accepted by the public as a model which is worth while to produce. It is quite desirable to select models for shop work that are practical from everyone's standpoint, if possible.

The hand axe will fit into a wood working or iron working department very satisfactorily. For a wood working department, the axe forging should be purchased with the eye drilled and the blade and head hardened and tempered; leaving the problem of making the handle, hanging the axe, and grinding the blade for the student. For an iron working department, several valuable problems are to be had; making the jig to hold the forging to be drilled, the drilling, hardening, tempering, grinding, finishing, and the making of the hand tool or a machine cutter head for forming the end of the handle to fit the eye of the axe.

We have been using the forgings in our Permit and All Day Industrial classes this year, and have purchased the forging with the eye drilled. It is not advisable to try to drill the forging unless you have a suitable drill in your department.

To form the eye of the axe the forging is placed in a suitable jig and three holes drilled. The two outside holes are drilled first, then the center hole. Each hole should be counter bored at each end in order that the handle will enter smoothly at one end, and allow the wedge to expand the handle at the other. A one-half inch high speed drill running at a speed of 750 R. P. M. is used.

The hardening and tempering of the head and blade of the axe is done in one operation. Heat the axe uniformly to a cherry red heat in a forge using charcoal for fuel. Take the axe from the fire and dip about 1½ inches of the blade in linseed oil, moving it back and forth for



DETAILS, AXE HANDLE

THE AXE COMPLETED.

ten or fifteen seconds. Duplicate this in water for a few seconds, also dipping the head of the axe in water for a few seconds. This dipping process makes the blade black, and it is necessary to use a block with emery cloth to polish the surface of blade and head so the colors can be watched. When the red color is leaving the head and taking on a purple tinge, the head should be dipped in water again, as this causes the head to retain a spring temper. It is necessary to watch the blade carefully, and to dip it in the water or to pour water on it from a cup, when the straw color at the cutting edge takes on a purple color.

The grinding operation is best carried on with a built-up rag wheel. Glue three or four sections of cotton buffing wheels together; we are using an 8 inch wheel running 3,000 R. P. M. Coat the face of the wheel with plater's glue and roll it in No. 80 emery and allow it to dry for twenty-four hours. Recoat the wheel as often as the emery becomes worn.

This wheel will leave a very good finish on the axe after the emery has become worn, but better results can be obtained by using another wheel faced with No. 120 emery for the finishing operation.

Hickory is the best material for the handle. The end that enters the axe should be worked down to size $\frac{1}{2}''$ x $1\frac{1}{4}''$ and the curve with $\frac{1}{4}''$ radius worked out on the top and bottom edge. Now by drawing the hand scraper, Figure 1, over the handle a few times, the end will be the exact form to fit the drilled eye of the axe. The form of the eye is desirable because it has a large friction surface for holding the handle.

TRAVEL BOOKS BY "UNCLE SAM."

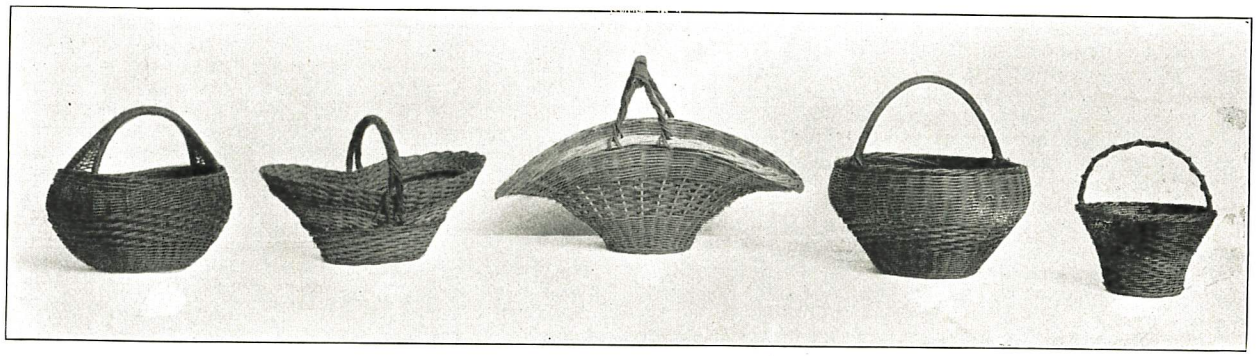
"GEOGRAPHY, TRAVEL, EXPLORATION" is the title of a new free price list just issued by the Superintendent of Documents, Washington, D. C., in which are enumerated many Government publications containing information regarding places at home and abroad. Any one of the publications may be had by forwarding a nominal sum covering cost of issue, to the Office of the Superintendent. Prices range from 3 cents to $9, most of the sums, however, being less than $1.

Numerous pamphlets listed in this collection describe different parts of the United States and its Territories, geographically, geologically, and historically. Among these are such special pamphlets as:

18. Welding—2 kinds, practical, related to farm work.
19. Horseshoe making.
20. First aid to household furniture:
23. Painting, staining or treating floor.
24. Making a farm door-yard gate.
25. Making a home-made fireless cooker, one of 2 methods.
26. Making a home canner, one of 2 methods.
28. Get out a set of plans and specifications for model farm home.
29. Show how to give first aid to school furniture and equipment; such as the repair of a seat, window, fence, broken gate, blackboard, steps, and sidewalk.
30. Show how to repair the cover or broken back of a book.
31. Art metal work for household.
32. Modeling in clay and plaster.
33. Leather work: repair of leather goods or art work.
34. Fabric dyeing and printing.
35. Pottery for use in the home.
36. Basketry for use in gathering and marketing vegetables and fruit.

A number of the publications deal with South American countries and capitals, Panama, Mexico, and the West Indies. Others deal with arctic and antarctic explorations; still others take the reader to strange places in Asia, Africa, or Australia.

Anyone interested in this price list (No. 35), which enumerates these "travelogues," may obtain a copy by sending a postal to the Superintendent of Documents, Washington, D. C.



BASKETS DESIGNED AND MADE BY MARY MILES BLANCHARD.

The Convention of the Eastern Arts Association

Royal Bailey Farnum, Albany, N. Y.

The history of the Eastern Arts Association is a record of the growth of the times. Commencing with a band of Massachusetts and Connecticut Valley Art and Industrial teachers it grew into the Eastern Art Teachers' Association in 1898 and then, with the growing demand for applied arts, it combined in 1908 with the Eastern Manual Training Teachers' Association. For a number of years the cumbersome and complicated title of Eastern Art and Manual Training Teachers' Association had caused many to seek a new name, but to no avail, for both the art and manual training people felt the importance of their subject and were unwilling to compromise. But the shifting times and the introduction of the newer agricultural, household and domestic arts subjects caused a revulsion of feeling and a sentiment in favor of a shorter and at the same time, more inclusive name—Thus when the final vote was taken there was practically no opposition to the simple title, Eastern Arts Association.

This acceptance of a new name by a big majority indicates the general spirit of the whole meeting of the Association. A feeling of good-will, optimism and keen enjoyment pervaded thruout.

The convention was held in Buffalo, April 29, 30 and May 1st and from every standpoint was a success. Once again the old "standbys" were in evidence, and on registration evening, the day before the opening, the backbone of the association had signed up. Many new faces were also present, for each new meeting place offers opportunity for local and nearby membership, caught only in such an event.

Unfortunately the meetings were held in different high schools and the exhibits in a third hall between the schools. This matter will in future conventions be carefully arranged so that all may be together under one roof. However, this physical handicap had little effect on the spirit of the gathering and the special night exhibitions helped in a measure to provide time for viewing them with due care and leisure.

A synopsis of the speeches would be somewhat tiring and their effectiveness would be completely lost. It will, therefore, suffice to mention in a general way all the fine things which were said. Thruout the meeting, the idea of art as an essential and necessary part of the industrial and trade product prevailed. Topics which appeared to deal with commercialism developed into art discussions. When Wm. Sloane Coffin of the W. & J. Sloane Co., New York City, said, "I plead for the education of boys and girls who are selling the goods," he followed it up by adding frank statements dealing with the art education of boys and girls. His friendly criticism, keen and cutting, were for the purpose of suggesting how we might all work together, the art teacher, the industrial teacher, the household arts teacher and the commercial house which buys and sells to the public. "For," said Mr. Coffin, "united we progress, divided we become rooted and prejudiced."

This idea of co-operation was proposed by other speakers, and came directly from representatives of business houses. Mr. A. S. Bennett, manager of the School Arts Publishing Company, expressed the wish that the teachers might do more practical work, either thru their pupils or for themselves. He cited, as an illustration, a certain competition for a post card. Out of hundreds of entries not one from the schools was accepted. Mr. Arthur F. Wiener, President of the International Art Service of New York City, told the same story. The schools are turning out students of academic technic but fail to produce practical designers. And in the same vein, Mr. Charles Booz, Head Designer of the M. H. Birge Sons Company of Buffalo, spoke of the increasing demand for the practical study of art as having increasing commercial value in the wall paper product. Not only must there be co-operation among all concerned but there must be complete unity between art and commerce, for he said, "Art without commercialism means the artist without bread and butter." Furthermore, the more practical the idea the better the sale, for "ideas of art in wall papers," he continued, "are sold so much per roll."

These sincere statements of commercial men were stimulating tonic for the oftentimes prosy teacher. There was intimated the positive need for practical art and with it the layman's just questioning, "What are you teachers doing about it?" The plea was for design; for decorative art; not for perspective and picture painting. Perhaps there may have been too little recognition of the cultural aspect of the manual and household arts, a viewpoint which the teacher must always take into consideration, yet the viewpoint of the outsider is always welcome.

Two teachers who are also practical workers, David Varon, an architect of New York and Raymond P. Ensign of Pratt Institute, presented helpful suggestions from a methods standpoint; Mr. Ensign being especially helpful in his simple definite steps illustrating the development of his courses in design.

On the purely industrial side the meeting was well represented by A. S. Hurrell, Principal of the new Buffalo Technical High School, who gave many helpful facts concerning the organization and operation of his school; James Simpson of the Central Trades and Labor Council, Toronto, Canada, who traced the development of Manual Training and discussed in an entertaining and convincing way the gradual development of power thru this subject, from babyhood up, and Alfred P. Fletcher, Assistant Supt. of Schools of Rochester, who delivered an excellent paper on Industrial Education and Trade Agreements.

The next convention, it is hoped, will provide strong speakers in the household arts for the general session. The round table section in this subject was well attended and the educative, vocational and decorative aspects of home economics were presented. This section bids fair to be one of the strongest members of the Arts Association.

The other round tables, Drawing, Manual Training and Vocational Education, each had a large attendance with valuable papers, mostly illustrated in each subject.

At the drawing section Mr. J. Winthrop Andrews of Yonkers, N. Y., presented a most interesting report of the work of the committee on the establishment of uniform standards in representative drawing. An actual measuring scale of drawings was presented showing a definite standard for comparison in the matter of the relation of ellipses in an object. The scale and report will later be printed and will prove a valuable contribution to our literature on drawing.

Reports were also presented from committees on professional qualifications, time requirements and function and terminology in Manual Training. These reports serve to indicate that at last this association is realizing its opportunities as a clearing house in all matters pertaining to the arts and that its activities may include more than an annual meeting and exhibition.

Among other interesting and lasting features of the convention was the organization of the Normal School Section. Not less than fifty persons, teachers in normal and training schools, were present at an informal luncheon at the Buffalo Twentieth Century Club under the leadership of Mabel Soper of the Bridgewater Normal School of Massachusetts. A few short addresses were delivered and the members voted to become a permanent round-table section of the Association.

The arts of sound and movement were not neglected at the convention for all general meetings were preceded by delightful musical treats. A school orchestra one morning, tambourine dancing, aesthetic dancing and exercises in mazurka rhythm a second morning and a boys' glee club the third morning. The annual dinner, too, offered more demonstrations of this kind, for, after the fine talk on "College and the Vocations" by Dr. Frederick H. Sykes, President of the Connecticut College for Women at New London, students of the State Normal School at Buffalo presented, under the direction of their instructor, Jane M. Keeler, pantomine scenes from the life of Joan of Arc based upon the pictures by Bontet de Monvel. These scenes were admirably presented notwithstanding the small space and temporary staging and offered an admirable outlet for school dramatics and costume and stage design.

One afternoon was offered for excursions to industries of various kinds and one evening to exhibits. The large auditorium or public hall was divided into booths, the com-

mercial exhibits occupying the wall sections on three sides of the floor. The vocational school boys of the city constructed, stained and papered the booths, all of which were in place the day before the opening sessions.

The modern trend toward decoration in the art classes, personal projects in the manual training classes and wholesale factory production in home economics and vocational classes was everywhere apparent. The work was generally excellent from the artistic and the technical standpoints. With few exceptions all work was well arranged, pleasingly mounted and logically and simply presented. Many expressed the opinion that the exhibits both commercial and educational were the best experienced in the history of the Association. And all reported the meeting one of the most successful ever attended, thanks to the untiring efforts of the local committee and the quiet but forceful leadership of the president, Harry W. Jacobs.

According to custom the next president was taken from the industrial field and Millard B. King, Expert Assistant for Industrial Education in the State of Pennsylvania was unanimously elected to that office with Ethelwyn C. Bradish of Teachers College, Columbia University, as Vice President. The business meeting voted to hold the next meeting in the East and in all probability Springfield, Mass., or New York City will entertain the teachers in 1916.

Western Drawing and Manual Training Association

Wilson H. Henderson

THE twenty-second annual meeting of the Western Drawing and Manual Training Association, which was held in Chicago May 5, 6, 7, and 8, had the largest attendance of any convention which this Association held. The meeting was characterized by the enthusiasm which usually prevails at the meetings of this organization. The educational exhibits while not so extensive as at some previous meetings, were well placed and received careful attention. The exhibits of commercial supply houses were somewhat crowded and hampered by lack of sufficient space.

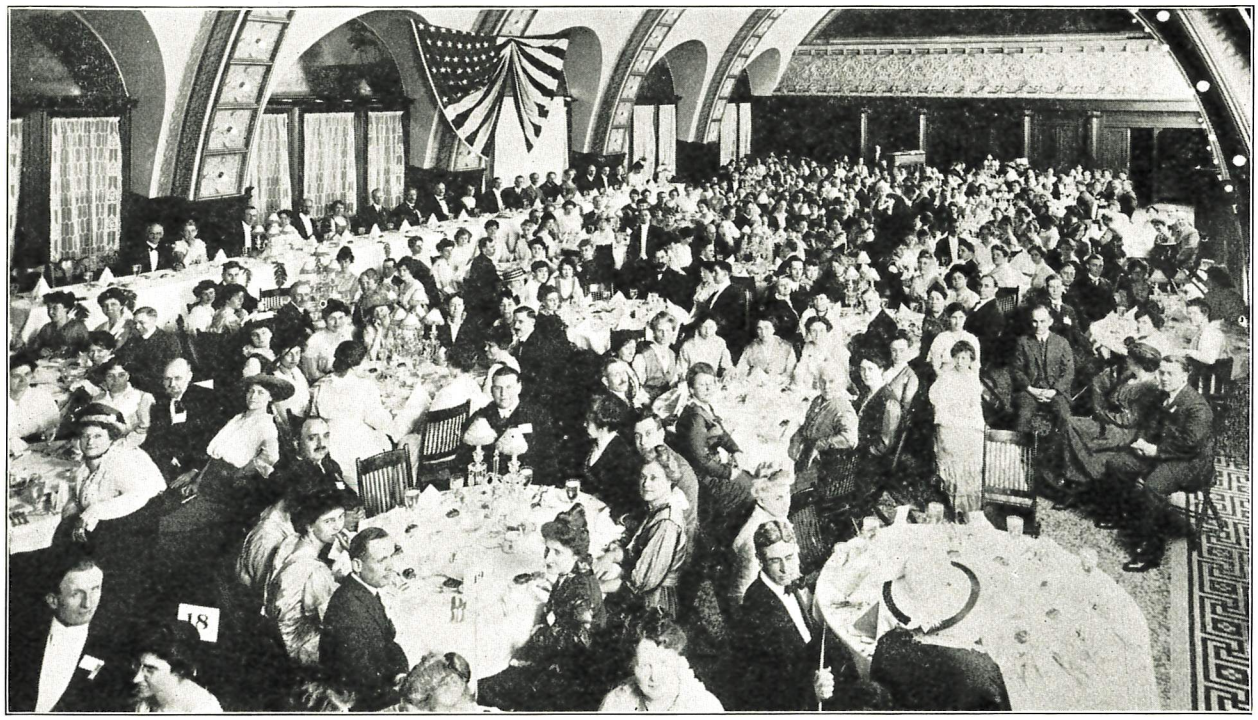
The general topic of the Convention was "Co-operation in Educational Problems". Four phases of school work were represented on the program: Art, Manual Training, Household Arts, and Vocational Education, but these phases were so closely linked and the subjects so interwoven that one could not tell when each subject was under discussion. Every session was well attended and the discussions were of such a lively and enthusiastic character that it was often difficult to bring them to a close.

As usual, the Vocational Education Round Table caused the most spirited discussions of the entire meeting. Prof. R. J. Leonard of Indiana University gave a convincing address on the subject of "The Weakest Link" in education, which brought forth some lively expressions of opinion from various members. Prof. Ira S. Griffith of the University of Missouri presented the subject of "The Boy or the Trade as an Aim" in Industrial Education. Prof. Crawshaw of the University of Wisconsin took occasion to severely criticise the recommendations of the Russell Sage Foundation regarding industrial education in Springfield, Ill. He also took exception to some of the recommendations made by Prof. Leonard in regard to the teaching of Manual Arts. Altho the discussion was brought to a close in the meeting, the audience adjourned in groups to various parts of the building to "thresh it out".

The Annual Banquet was devoted to fun and all serious matters were forgotten. S. J. Vaughn, as Toastmaster, called upon various members to do "stunts" and the results were varied and ludicrous. The illustrated talk on color photography by Mr. Harry Wells, which followed the banquet was an exceptional treat.

The local committee spared no pains to make the convention an enjoyable one. Friday afternoon the guests were given a forty-mile auto ride thru the parks of the city stopping on the way to visit the studios of Lorado Taft.

For some years there has been a desire to change the name of the association. This year the Council has been asked to consider the matter seriously and to submit a



Members and Guests of the National Drawing and Manual Training Association at the Annual Dinner, Chicago, May 5, 1915.

name which will incorporate all of the interests represented in the organization. Some of the names which have been suggested are "Western Allied Arts Association"; "Western Arts Association"; "Western Manual Arts Association"; "School Arts Association"; "Industrial Arts Association". Undoubtedly, the matter of changing the name will cause considerable discussion and it is for this reason that the matter was deferred for a year.

Within recent years the work of this Association has assumed National significance. The reports containing the addresses and discussions of the meetings are now in nearly all college and normal school libraries. The annual exhibits are the most comprehensive exhibits of their kind which are held in the country. At the close of the Chicago convention the Council decided to invest $1,000 in some income bond, which establishes the Association as one of the permanent educational institutions of the United States.

Exhibit of Manual Training Shown by the Cincinnati Schools at the Convention of the Department of Superintendence, February, 22-28, Mr. E. A. Christy, Supervisor.

Urgent invitations to entertain the next convention were received from the following cities: St. Paul, Grand Rapids, and Detroit. The association voted to accept the invitation of Grand Rapids because of the exceptional opportunities afforded by that city for displaying the artistic product of its industries, and for the reason that for the past three years the city has so cordially sought the convention. St. Paul, Detroit, Cincinnati, and Dayton gave notice that they will issue invitations for the 1917 convention.

The following officers were elected: President, S. J. Vaughn, State Normal School, DeKalb, Ill.; Vice-President, Jennie W. Gilmore, McKinley High School, St. Louis; Treasurer, L. W. Wahlstrom, Francis W. Parker School, Chicago; Auditor, Bertha L. Patt, State Teachers' College, Cedar Falls, Ia. Wilson H. Henderson, Milwaukee, Wis., was re-appointed Secretary.

MR. PROSSER RESIGNS.

Mr. Charles A. Prosser, Secretary of the National Society for the Promotion of Industrial Education, has resigned and will, on September first, assume the position of Director of the Dunwoody Industrial Institute of Minneapolis.

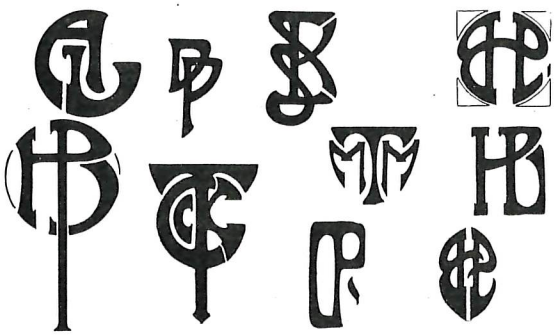
Mr. Prosser has been a leading figure in the movement for Industrial Education in the United States since 1910. In 1911, after resigning the superintendency of the schools at New Albany, Ind., he took up special work in Industrial Education at Columbia University and shortly after was made Deputy Commissioner of Industrial Education for the state of Massachusetts.

In 1912, he became secretary of the National Society for the Promotion of Industrial Education. It was during the period of his connection with the Society that the greatest strides were made in this important movement, culminating in the last year, in the appointment of a commission on National Aid to Vocational Education.

Mr. Prosser is the author of a number of books and articles on Vocational Education and has taken a leading part in promoting legislation in Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Indiana, Virginia and Missouri. He is a member of the Board of Managers of the Vocational Guidance Bureau of Boston, and holds a number of other educational offices of honor.

In January, 1915, he was awarded the degree of Doctor of Philosophy by Columbia University.

As head of the new Dunwoody Institute, Mr. Prosser will have a wonderful opportunity to carry into practical effect, the theories and administrative principles which he has advocated for years. The Dunwoody Institute has an endowment fund of $3,000,000 for carrying on a school that shall give instruction in industrial and mechanical arts, including as of special importance, the art of milling and the construction of milling machinery. The Institute will be free to the youth of Minneapolis and Minnesota without distinction.



Artistic Monograms Arranged by Mr. Fred Victor Cann, Chicago.

ITEMS OF CURRENT INTEREST

HOME FARMING AND THE USE OF LAND IN TEACHING AGRICULTURE IN HIGH SCHOOLS.

With the idea of determining how land is being used by high schools in the teaching of agriculture, the Office of Experiment Stations at Washington some time ago sent a questionnaire to all high schools receiving State aid for agriculture and to special high schools and normal schools known to have courses in this subject. Of 385 schools replying, 257 reported that some land was used in connection with their agricultural instruction. Of these 257 school farms, over one-half consisted of 6 acres or less, and there were fewer than 60 school farms with over 20 acres. Of the schools reporting that they had land, only 82 reported that they also had farm animals, and these in a number of cases consisted of a horse or team. The crops reported as being grown by the 257 school farms were as follows:

One hundred fifty were growing corn; 129, garden crops; 84, potatoes; 75, oats; 61, alfalfa; 42, cotton; 35, wheat; 29, clover; and 20, sweet potatoes.

The second inquiry indicates that only a very small amount of ground is used in raising laboratory material, and still less for projects by individual pupils. Only a small percentage of schools, outside of normal schools which largely aim to train teachers to supervise school gardens, were using land for school gardens. The larger uses were for crop rotation, general demonstration, and about 10 per cent of the land reported on was employed in raising pure-bred seed for distribution among the farmers and the pupils.

In reply to a question as to whether a school could conduct its agricultural instruction without a school farm, of 104 schools which answered and had land, 39 replied "yes," and 65 replied "no."

Home Projects.

Seventy-four of 156 schools replying to such a question, reported that their students were engaged in doing home project work covering almost every phase of farming and gardening. In handling the home projects the great difficulty seems to be that the instructors have such a big territory and such a large number of pupils that it is impossible for them to get around to the home projects often enough to supervise the work properly.

Attention is called to the fact that at least one-third of the high school students studying agriculture in the United States are girls. In many of the agricultural classes visited, the number of girls exceeded the number of boys. This was explained as being due to the fact that the girls wished to teach in the rural districts and would have to pass an examination in agriculture. To the investigator this suggested the need for a modification of the methods of teaching agriculture and the use of the school land and the home project.

The results of this investigation, which are printed in Department Bulletin 213, "The Use of Land in Teaching Agriculture in Secondary Schools," are summarized as follows:

The principal facts developed by this investigation were that in the New England States the majority of the pupils are living at home and have easy access to the school, that the school farms are small, and that the home project is more or less closely supervised, also that the majority of the agricultural instructors are of the opinion that they could easily get along without the school farm.

In the North Central States the school farms are small, the pupils are drawn from greater distances than those in the New England States, and they have not as good means of transportation. It is also evident that there are a large number of boys from towns and cities, and of girls desiring to become teachers, in the classes studying agriculture.

In Minnesota the agricultural instructor has not only to teach but to do extension work, with the result that he has more than he can properly care for. The part that he would like most to neglect is the school farm. Wherever the home project has become a part of his method of teaching agriculture he has not had the time properly to supervise or to work out the details. For these two parts of the country the reasons given for the desire to do away with the school farm are not educational but pertain to the management of a farm of uneconomical size. Since the primary purpose of the school farm is educational, this should not count in making a decision. The question that should be decided is whether the school farm could be used to make the agricultural workers of that community more efficient, or whether some other method could be devised to take the place of the school farm, as, for example, the home project.

In the South, the majority of the schools have a boarding department and a large farm, so that the agricultural pupils have a better opportunity to participate in the farm operations, and home projects have not been developed; but even in these schools, where the pupils carry on the farm operations under the direct supervision of the agricultural instructor, it would seem that not enough attention has been paid to making the pupils efficient in the ordinary farm operations and too much attention has been given to getting the farm work done. Thus, the use of land in agricultural teaching presents three different and distinct problems which have no common ground for working out their solution.

The returns indicated that some of the things that could be used most extensively by all the schools having farms are the distribution of pure-bred seed, the introduction of new varieties of plants, fruits, and shrubs, and the extending of the services of pure-bred animals in the community.

UNIVERSITY EXTENSION COURSES IN MANUAL ARTS.

Teachers of the Industrial Arts who wish to do work for college credit, will be interested in the announcement that the Department of Manual Arts of the University of Wisconsin will now give by correspondence, those of its courses which do not require shop or laboratory work as part of the course. Four courses are offered, which may be taken for credit toward either a Bachelor's or Master's degree.

The course in "The History and Literature of Manual Arts" is designed to give an historical background for work in the industrial arts. It treats of the relation of manual and industrial arts to education in general; the influences for manual training, arts and crafts, and industrial education; the effect of the manual labor movement, the co-operative community; state and national legislation on manual and industrial education; types of schools and their organization in school systems; influential periodical and book literature. The course in "The Teaching and Supervision of Manual Arts" is offered primarily for those who are teaching manual training and industrial work but is conducted with a view to familiarizing all educators and others responsible for the education of children and youth with the best means of utilizing constructive and industrial materials as illustrative and manipulative means in education, or as means towards vocational ends.

The course in "Vocational Education and Guidance" analyzes the sociological, economic and educational aspects of education. State and national legislation is given considerable attention. Existing types of schools organized for specific ends in vocational education are evaluated as to purpose, method and accomplishment. Educational and industrial surveys are studied as to means and results.

Vocational Guidance in its relation to vocational education is discussed and plans for providing vocational guidance are formulated. "The Organization of Manual and Industrial Arts" deals with the problems of organizing and administering two types of material: (1) that which constitutes a course of study, (2) that which serves to aid in the handling of a class, such as supplies, equipment, and teaching devices.

The courses were prepared by F. D. Crawshaw, Professor of Manual Arts and Wilson H. Henderson, Assistant Professor of Industrial Education. Those who are interested may secure complete information by application to the Extension Division of the University.

INDUSTRIAL TRAINING CONFERENCE IN READING, PA.

READING entertained the first District Conference of the Industrial Training Instructors of Pennsylvania on April 10th. The meeting was held at the High School for Boys, where an extensive program of discussions was heard. Luncheon was served to the delegates at the new "Hotel Berkshire," followed by informal talks in the lobby. In the afternoon, thru the courtesy of the Reading Chamber of Commerce, the visitors were given a complimentary sight-seeing tour of the city by auto.

Mr. Millard B. King, Chief of the State Department of Vocational Education, has divided Pennsylvania into six districts. Reading is included in District No. 5 to which also belong Boyertown, Carlisle, Easton, Gettysburg, Hanover, Lebanon, Wyomissing, Harrisburg, York, Kutztown, and Wiconisco. District No. 1 met at Erie April 17th, District No. 4 at Scranton April 24th, District No. 3 at Altoona May 8th, District No. 6 at Philadelphia May 15th and District No. 2 at Pittsburg May 22nd. The purpose of the conferences is to bring the vocational and industrial instructors of the state into closer relation with the State Department of Vocational Education. Mr. Millard B. King and Prof. E. J. Bowman, of Penn. State College, were the principal speakers at the Reading Conference. The following was the program:

1. The content and extent of the English that may be related directly to the shopwork and domestic arts work. Mr. H. J. Henry, Reading.

2. Methods of grading the pupil in manual arts; in Domestic Arts. The project, the exercise; the general grades. Mr. Charles Obold, Reading.

The lesson plan in manual and domestic arts. Mr. Millard B. King, State Dept. of Education.

How should marketing be taught so as to make it of practical value? Miss Mary F. Mayer, Reading.

To what extent should "safety first" be taught in the cooking room? In the shop? Miss Beulah Gradwohl, Easton.

Should vocational work be introduced in departments of existing high schools or in separate schools? Mr. E. J. Bowman, Penn. State College.

CO-OPERATIVE EDUCATION IN FITCHBURG.

THE following resolutions were unanimously adopted by the Fitchburg, Mass., Central Labor Union at its meeting of Oct. 7, 1914:

"Whereas, The Fitchburg plan, so-called, of co-operative industrial education is being urged and advocated by manufacturers and schoolmen in various parts of the United States as of great value alike to the schools, the industries and the pupils, and

"Whereas, It has been the practice of certain people interested in this plan to represent it as having the approval of the working men and women of Fitchburg, including those in the organized labor movement, with the result that numerous inquiries concerning the same have come to officers of Fitchburg labor bodies, be it

"Resolved, That the Fitchburg Central Labor Union, in regular meeting assembled, place itself on record as being opposed to this plan of education, not only as detrimental to the interests of the organized workers of this city and its vicinity, but to unorganized workers as well.

"Resolved, That the Fitchburg Central Labor Union condemn this so-called co-operative plan of education as one more movement of interests hostile to organized labor to try to counteract its efforts in behalf of the toilers and to make tradesmen more subservient to them.

"Resolved, That we further condemn this system as one designed to give certain classes of employers unwarranted right of interference in the conduct of the public schools, of which the more unscrupulous will not hesitate to take advantage, and an interference with the usual courses of study prescribed for high schools, to the detriment of the pupils individually and the school system as a whole, as well as economically harmful to the workers from whom the schools derive their support. And be it further

"Resolved, That these resolutions be spread upon the records of the Fitchburg Central Labor Union and copies sent to all organizations or individuals making inquiries concerning the attitude of the organized workers of Fitchburg toward this so-called co-operative industrial system of education."

COURSE FOR PRINTERS' APPRENTICES.

CHICAGO, ILL. The sub-committee of the board appointed to investigate the matter of printing courses for apprentices has submitted its report calling for the establishment of continuation classes. Such classes must provide for the attendance of each apprentice at the school for one-half day each week. Part of the work will cover practical instruction in the elementary branches with particular attention to spelling, instruction in technical studies, also history, civics and good literature. A limited equipment of presses and type will be required for the regular students of the Harrison High School but no shop equipment will be provided for the apprentices. The course will be five years in length and will cover forty weeks of four hours each.

The course as outlined provides for the following detailed study of the subjects to be pursued:

1. *English—*

This will include (a) Grammar, a review of the parts of speech; correction of faulty English; simple paragraphing and composition; business letters; punctuation. (b) Spelling; rules for spelling; rules for word-division, for compound words, capitals, etc., with much practice in spelling; spelling of trade names and words; abbreviations; use of dictionary and study of marking. (c) Proof reading; oral reading for copy holding. (d) Preparing copy; how to cut, folio and head; how to indicate type; rules for spacing and indention; how to determine size of illustrations. Reading and study of some work of literature suited to the age of the apprentice.

2. *Arithmetic—*

(a) Review of elementary arithmetic; common and decimal fractions; percentage; mensuration. (b) Paper table; type measurement and the point system; computing type on page; weight of type; estimating paper; estimating composition; estimating manuscript. (c) Simple bookkeeping.

3. *Drawing and Design—*

Simple freehand and mechanical drawing, leading toward study of type faces, balance and shape harmony; design. Study of color.

4. *History and Civics—*

Brief history of U. S. History and study of government; history of printing, studied thru biographies of great printers; industrial history; study of hygiene; physiology; occupational diseases; necessity for good air and good light.

5. *Advanced Technical Studies—*

Inks and their composition; paper and its manufacture, sizes, weights, qualities; electrotype, stereotype, zinc plate, half-tone, wood cut; type-metal and type making; study of type bodies and faces. Advanced color study. Criticism of printed matter.

6. *Course in Imposition.*

NEW BOOKS AND PAMPHLETS

The Public Schools and Women in Office Service.

By the Department of Research, Women's Educational and Industrial Union, Boston, Mass. Prepared under the direction of May Allison. 187 pages. Published by Women's Educational and Industrial Union, Boston, Mass. Price, 80c; postage extra.

This is a very complete study of the relation between the schooling of women and girls and the subsequent wages and promotion in business. It is elaborately illustrated by reliable tables and charts. Comparisons are made between private commercial schools and the courses in public high schools. A number of suggestions and recommendations are presented for schools giving commercial courses, which are worthy of careful consideration.

While the study is exhaustive and complete, giving all of the different aspects of the situation, thru it all there is a tone of moderation which is commendable.

Women contemplating entrance into business or office work and schools offering courses preparatory to such work should make a thoughtul study of the data presented in this volume.

Machine Shop Practice.

By William J. Kaup. 199 pages. John Wiley & Sons, New York. Price, $1.25.

This book is intended as a manual for apprentice and journeyman machinists and for use in trade, industrial, and technical schools. The author has a thoro understanding of school needs and conditions and has prepared the text in such a way that the reason for every operation is emphasized, thus leading the pupil to think and eventually to plan his own work. He has assumed that the reader is a novice who wishes to learn each operation correctly and to know the reason for performing each operation in the prescribed manner.

One chapter is devoted to hand tool work and the remainder to the work of the machines. The appendix contains a chapter on system in the shop, time saving, routing and checking, time, stock and repair cards, etc.

The book will be welcomed by every teacher of machine shop work.

Cooking in the Vocational School as Training for Home Making.

By Iris Prouty O'Leary. Bulletin No. 1, 1915, United States Bureau of Education, Washington, D. C.

A 36 page bulletin dealing with the teaching of cooking for home making purposes in the day and evening classes of the vocational school. It describes equipment and gives layouts of kitchens and other laboratories together with courses for various types of schools.

Vocational Arithmetic.

By H. D. Vincent. 126 pages. Price, 55c, net. Houghton Mifflin Company, Boston, New York, Chicago.

This book gives typical problems met in 68 industries and 32 other subjects, devoting one page to each industry or subject. The text matter is followed by a series of exercises in business letters and forms.

How To Do Architectural Drawing.

By Oscar S. Teale. 238 pages. Published by the author, New York City.

A beginner's book on Architectural drawing which devotes the first two chapters (74 pages) to a description of drawing instruments and their use.

The third chapter under the title "Practical work" is devoted to a description of the preparation of a series of charts which are presumed to lead the pupil to care and accuracy in the lay-out of a drawing, but have little reference to Architectural or building forms.

Then comes a chapter on geometric formula without particular reference to Architectural application. Some of the later plates or charts in the book have architectural significance. A Truss; A Window for a Frame House; Outer Wall for a Frame House, and Architectural Lettering are the subjects of the last chapters. The chapter on lettering is good in precept but the types given are not well selected for legibility or neatness.

The Teaching of Drawing.

By S. Polak and H. C. Quilter. 168 pages. Price, 85 cents. Warwick & York, Baltimore.

This is a manual of Free-hand drawing. In the preface of this book the statement is made that the authors have attempted "to preserve what is good in old methods, while pointing out the best ways of commencing and pursuing newer and more educational courses."

The authors are English drawing instructors. There is little new material in the book for the American teacher of drawing. There is, however, a clear statement of principles and methods which need constant restatement and emphasis to American teachers.

The illustrations are clear and definite, excepting those of out-door sketching which are confused and in poor technique.

Forge Work.

By William L. Ilgen. Editorial Revision by Charles F. Moore. 210 pages. American Book Company, New York, Cincinnati, Chicago.

The author's purpose in preparing the text is to put into permanent form a course of instruction in forge work and a series of exercises for practice, for the uses of classes in industrial arts. The book is intended for the use of the students. It describes the tools and appliances used in forge work together with the operations in which they are used. Each chapter is followed by questions for review.

It contains chapters on the treatment of tool steel, tool making, stock calculation, the power hammer, art smithing and scroll work, iron ore and smelting, and the manufacture of iron and steel. Teachers wishing to find a text on forge work for class work would do well to carefully consider this one.

A Manual of Shoemaking, and Leather and Rubber Products.

By William H. Dooley. 287 pages. Price, $1.50, net. Little, Brown & Company, Boston.

The author is principal of the Lowell Industrial School and is well acquainted with the needs of a book of this character. The first chapters treat of the history of footwear, its adaptation in conformance to the anatomy of the foot, and its growth to the present stage of development.

It is a very complete treatise of the entire subject, describing leathers and the various methods of tanning, and the manufacture and repair of different kinds of shoes, both leather and rubber. The book appears to be an excellent one for schools teaching shoemaking.

Practical Salesmanship.

By Nathaniel C. Fowler, Jr., assisted by 29 expert salesmen, sales-managers and prominent businessmen. 317 pages. Price, $1.00, net. Little, Brown & Company, Boston.

A system of vocational education cannot be complete without definite instruction in salesmanship for the boys and girls who will enter this important branch of commercial work. The present book appeals as a simple, elementary treatise that should find a place as a reference book in secondary schools. In the hands of a judicious teacher it may readily be used as a class text. Its author is frank to acknowledge that salesmanship as such cannot be taught academically. The personal elements, a little of the psychology and ethics, are presented in a broad, concrete way.

Report of the Commissioner of Industrial Education, California for 1914. Prepared by Edwin R. Snyder, Commissioner, Sacramento.

Playground Apparatus. Bulletin 1, Fresno State Normal School, Fresno, Cal. An inspiring discussion of the playground movement. It includes full plans, bills of material and instructions for making a giant stride, combination rings, teeter ladders, a slide, horizontal bars and a horizontal ladder in school shops. Each of the articles has been made in the Normal School shop under the direction of Mr. W. B. Givens.

Souvenir of the Manual Training and Industrial School, of New London, Conn. A series of 25 plates showing the classes of the school at work and illustrating, better than text can describe, the products and problems made by the students.

Handicraft Club Work. Manual Training, Parts I, II, III. Prepared by Mr. O. H. Johnson, Department of Engineering Extension, Iowa State College of Agriculture and R. K. Farrar, Department of Agricultural Extension. Published by the Departments of Agricultural and Engineering Extension, Ames, Ia. Three suggestive pamphlets for teachers in rural elementary schools. The problems are practical in the best sense; the illustrations are complete and the directions full and exact.

THE LAW AND EVIDENCE, a folder prepared by the boys of the school printing shop, Somerset, Ky. A most useful bit of school printing that any commercial shop might be proud of. It quotes the Kentucky law on the use of cigarettes and presents the evidence of the harmfulness of smoking in a manner that every boy will appreciate.

Lead Poisoning in the Manufacture of Storage Batteries. Bulletin 165, United States Bureau of Labor Statistics. By Alice Hamilton, M. D. A valuable study of the causes of lead poisoning and of means for preventing the same. Contains suggestions for legislation.

Manual Training for Country Schools. By L. M. Roehl. Bulletin, Milwaukee County School of Agriculture, Wauwatosa, Wis. A very practical pamphlet intended to help the country teacher in choosing equipment for woodworking and in selecting suitable projects.

The Curtis School of Printing for Apprentices. A very neat and exceptionally well printed booklet describing the school for apprentices maintained by the Curtis Publishing Company of Philadelphia.

MINNESOTA ASSOCIATION.

THE spring meeting of the Manual Arts Section (Minnesota Educational Association) was held April 2-3 at St. Paul, Minn.

The first session was opened at the Agricultural College of the University of Minnesota, and was addressed by Dr. G. D. Strayer of Teachers College, New York, and President G. M. Vincent of the University of Minnesota. Addresses were given by L. F. Knowles, Mantorville, on "Manual Training in Rural Schools" and by Prof. Johnston, College of Agriculture of the University of Minnesota on "A Forge Demonstration". During the evening an entertainment and a dinner were provided.

The second day's sessions were opened in the assembly hall of the Mechanic Arts High School, St. Paul. Mr. H. M. Brock, Minneapolis, spoke on "Should There be a Uniform Course of Study in City Schools?" The Minneapolis course in the grades was outlined and explained by Supervisor J. E. Painter; the St. Paul course by Mr. D. V. Ferguson. Other addresses included "Printing as a Manual Training Subject" by C. E. Hughes, Hibbing, and "A Short Course in Manual Training" by M. L. Robbins, Albert Lea. *C. E. Sanders.*

A CONFERENCE ON THE TRAINING OF TEACHERS FOR PRACTICAL ARTS SUBJECTS.

THE SECOND ANNUAL CONFERENCE on the training of teachers for Practical Arts Subjects to be taught in the schools in Indiana, was held in Indianapolis on April 6th.

The immediate purpose of the meeting was to discuss the following circulars issued by the Vocational Division of the State Department:

Suggestive courses for Special Teachers and Supervision of Industrial Arts.

Aims, Methods and Requirements for Industrial Arts in the Public Schools of Indiana.

Aims, Methods and Requirements for Domestic Science Instruction in the Public Schools of Indiana.

Industrial Arts and Domestic Science in the Rural Schools of Indiana.

Domestic Science in Town, Township and City Schools in Indiana.

The discussion was opened by Mr. W. F. Book, and was taken up by Mr. A. C. Jones of Marion, and Mr. W. E. Stone of the State Board of Education and others.

The general sentiment of the meeting was that the outlines of courses for teachers should be definite and concrete in order that teachers may know just what subjects should be studied extensively and just how much time should be given to each. It was suggested that the State Department prepare definite courses in all the subjects concerned, and have teachers and heads of departments in the several institutions preparing teachers share in the work of writing course outlines. Thirty-four persons representing the normal schools and colleges of the state were present.

NOW, ARE THERE ANY QUESTIONS?

Readers are urged to ask questions concerning the Industrial Arts. The editors will reply to those questions which they feel that they can answer, and to other questions, they will obtain replies from persons who can answer them authoritatively. Questions should be addressed to THE EDITORS.

Printers' Magazines.

San Francisco, Cal. Q:—Please give me the names of several good magazines on printing. I am a teacher of printing.—*C. R.*

A:—The leading papers are *The Printing Art,* Cambridge, Mass. $3.

The Inland Printer, Chicago, Ill. $3.

The American Printer, New York. $3.

Printing Periodical.

Glasgow, Scotland. Q:—In the April number of your excellent magazine, in the article by Miss King, the author mentions in a footnote, a number of sources from which teachers may draw standards and inspiration. Among them is the "Printing Arts Suggestion Book." Would you kindly send me the name and address of the publisher?—*M. M.*

A:—*The Printing Arts Suggestion Book* is published quarterly, by the University Press, Cambridge, Mass. Subscription, $1 per year; in countries of the postal union, $2.

Cement for Tool Handles.

Nashville, Tenn. Q:—Please let me know thru the question column of your journal how I can make a cement to hold tool handles in place.—*A. T.*

A:—To make a strong cement to hold wooden or metal handles, umbrella handles, etc., in place, melt in an iron ladle about four parts black resin, and one part each beeswax and yellow ocher or litharge. Melt the resin and beeswax first, then mix in the ocher or litharge. The wax while hot is poured into an ingot. When cool it is kept for future use. In fastening handles pulverize enough to half fill the hole in the handle, then warm the tang of the tool and press it into place. When cool the tool will be fastened firmly to the handle.—*D. M.*